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ACCOUNTS AND PAPERS:

TWENTY VOLUMES.

—(16.)—

RAILWAYS.

Session

3 February — 12 August 1842.

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ACCOUNTS AND PAPERS:

1842.

TWENTY VOLUMES:—CONTENTS OF THE
SIXTEENTH VOLUME.

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RAILWAYS.

RETURN to an Address of the Honourable The House of Commons,
dated 6 June 1842;—for,

COPIES of any COMMUNICATION from the BOARD of TRADE to the RAILWAY COMPANIES, and of the REPLIES on the part of any of the same, in reference to the practice of locking both the Doors of the Railway Carriages, or otherwise confining the Passengers travelling thereby.

Ordered, by The House of Commons, to be Printed, 14 June 1842.

Railway Department, Board of Trade,
Whitehall, 26 May 1842.

Sir,

THE attention of the Lords of the Committee of Privy Council for Trade having been drawn to the practice of locking the doors of railway carriages, in consequence of the recent disaster on the Paris and Versailles Railway, their Lordships have referred the subject to the Inspector-general of Railways, Major-general Pasley, who has reported to the following effect :—

“That his opinion is decided that passengers in a railway carriage ought not to be shut in, by locking both doors, without the power of getting out, though it is proper and useful to lock all the carriage-doors on the off-side towards the middle of the railway, where they might be crushed by a train moving on the other line of rails; that if the passengers have the power of getting out on the near side of the train only, it may be the means of saving their lives under many circumstances, which are too obvious to require explanation, and that the opposite practice of locking up the passengers is said to have caused the loss of many lives which might otherwise have been saved in the late lamentable railway catastrophe at Paris.

“That the practice of locking both doors has been adopted by one or two Companies in this country, from a belief that it is safer to deprive passengers of the means of jumping out when the train is in motion; but that this precaution is of little use in the case of third-class passengers, who travel in open carriages, and can seldom be of use, except in the case of persons reckless from the effect of liquor, or devoid of common prudence, in which case any accident that might occur would be justly attributed to the individual himself; while in the case of lives being lost in consequence of the passengers being locked up, the blame would be properly attributed to the Directors.”

I am directed by their Lordships to request you to call the attention of the Directors of the Railway Company to the above report, and to express to them their Lordships' opinion, that the course recommended by Major-general Pasley should be invariably adopted.

A reference to the late accident on the Paris and Versailles Railway, together with that which occurred in October last on the London and Brighton line, also induces their Lordships to recommend, that where it is necessary to employ two engines in drawing a train, care should be taken not to use engines of different power and construction, and especially not to place a four-wheeled engine immediately in front of one with six wheels.

The Secretary of the

Railway Company.

I am, &c.

S. Laing.

REPLIES FROM RAILWAY COMPANIES TO

REPLIES from RAILWAY COMPANIES to COMMUNICATION from the
BOARD OF TRADE.

MANCHESTER AND LEEDS RAILWAY.

Sir,

Superintendent's Office, Manchester,
30 May 1842.

I HAVE the honour to acknowledge the receipt of your letter of the 26th, addressed to the secretary of this Company, conveying the opinion of Major-general Pasley on the subject of locking passengers in the carriages. I am desired to state, for the information of the Lords of the Committee of Privy Council for Trade, that the Directors of this Company fully agreeing with the opinion of the Major-general, they have never adopted the practice of locking passengers in the carriages.

S. Laing, Esq., &c. &c. &c.

I have, &c.
(signed) *Jno. M. Laws.*

GRAND JUNCTION RAILWAY.

Sir,

Liverpool, 1 June 1842.

YOUR circular letter, under date the 26th May, has been laid before the Board of Directors of the Grand Junction Company; and I am desired by them to inform you, that the objectionable practice of locking the near-side doors has never been permitted on this line.

S. Laing, Esq., Board of Trade.

I am, &c.
(signed) *Mark Huish, Secy*

LIVERPOOL AND MANCHESTER RAILWAY.

Sir,

Liverpool, 31 May 1842.

I BEG to acknowledge the favour of your communication of the 26th instant, and I am happy to inform you, that the uniform practice of this Company is in accordance with the recommendations of the Lords of the Committee of Privy Council for Trade therein contained.

S. Laing, Esq., Board of Trade.

I am, &c.
(signed) *H. Booth.*

NORTH UNION RAILWAY.

Sir,

Preston, 30 May 1842.

IN reply to the circular dated 26th instant, I am to say, that it will be laid before the Directors at their next meeting on the 9th June; but in the meantime I am to state, that our practice is in conformity with Major-general Pasley's recommendation, namely, "to lock the doors on the off-side of the carriage towards the middle of the railway" only.

S. Laing, Esq., &c. &c. &c.

I am, &c.
(signed) *J. Chapman, Sec.*

BIRMINGHAM AND GLOUCESTER RAILWAY.

Sir,

Birmingham, 1 June 1842.

I AM instructed, in reply to the circular of the Railway Department of the Board of Trade of the 26th ultimo, to inform you, that the practice of locking both doors of the railway carriages has not been adopted by this Company; that the locking of the off-side door will be continued in accordance with the recommendation of their Lordships.

S. Laing, Esq.

I am, &c.
(signed) *George King.*

MANCHESTER

MANCHESTER AND BIRMINGHAM RAILWAY.

Sir,

Manchester, 27 May 1842.

IN acknowledging your letter of the 26th instant, calling the attention of the Directors of this Company to the report of the Inspector-general of Railways on the subject of locking both doors of railway carriages, and conveying the opinion of the Lords of the Committee of Privy Council for Trade, that the course recommended by Major-general Pasley should be invariably adopted, I am instructed to state, for the information of their Lordships, that the practice of this Company is in strict accordance therewith, viz. to lock the carriage-doors on the off-side only; but were it otherwise, the Directors would be happy to comply with the recommendation of their Lordships.

S. Laing, Esq., Board of Trade.

I am, &c.
(signed) C. J. Cleather.

PRESTON AND WYRE RAILWAY.

Sir,

Fleetwood, 27 May 1842.

I HAVE had your circular of the 25th instant on the subject of locking the doors of railway carriages when in transit, &c., handed to me by our managing Director for perusal and consideration, for the purpose of adopting the various suggestions therein, as far as applicable to our line.

I fully agree with the Inspector-general, and approve of the course laid down by their Lordships with respect to locking the carriage-doors on the off-side only; but as ours is a single line of railway, this precaution is with us unnecessary.

S. Laing, Esq.,
Board of Trade, Whitehall.

I am, &c.
(signed) S. P. Bidder, Resident Engineer.

HULL AND SELBY RAILWAY.

Sir,

Hull, 28 May 1842.

I BEG to acknowledge the receipt of your circular of the 26th instant, stating that the Lords of the Committee of Privy Council for Trade are of opinion, that the course recommended by Major-general Pasley, in his report referred to therein as to locking the carriage-doors on the off-side "should be invariably adopted," the General considering such a course to be proper and useful.

The Directors of this Company will always receive any suggestion from the Lords of the Committee of Privy Council for Trade, as well as from the Railway Department of the Board of Trade, with every respect and attention, and be most anxious to carry out any plan likely to promote the safety of passengers travelling by railway; but in the present case they are generally of opinion that the mode of leaving all the carriage-doors on both sides unlocked, which has been the usage since this line was opened, is, all things considered, most conducive to safety. The risk attendant upon getting out on the off-side of a carriage is now much better understood by the parties who travel in first and second class carriages than it was some time ago, and is therefore the less likely to be incurred by them; but I beg leave to suggest that, if an accident were to take place by which the carriages were thrown over, if they fell on the near side, the passengers would be in much the same situation as if the doors on both sides were locked, as they would be unable to get out of the carriages.

I shall lay your circular before the Directors of this Company at their next meeting, and shall feel obliged if you will favour me with an early reply to this letter to be laid before them at the same time.

S. Laing, Esq., &c. &c. &c.

I have, &c.
(signed) George Locking.

GREAT NORTH OF ENGLAND RAILWAY.

Sir,

Darlington, 28 May 1842.

I BEG to acknowledge the receipt of your letter of the 26th instant relative to the practice of locking the doors of railway carriages.

I am instructed to acquaint you, for the information of the Lords of the Committee of Privy Council for Trade, that on this line the doors of the carriages are never locked; the Directors being of opinion, that even locking the off-side doors is attended with a certain degree of danger, which is not counterbalanced by the advantages supposed to be derived from it.

S. Laing, Esq.,
Railway Department, Board of Trade.

I remain, &c.
(signed) W. O'Brien.

MIDLAND COUNTIES RAILWAY.

Sir,

Leicester, 30 May 1842.

I HAVE the honour to acknowledge the receipt of your circular of the 26th instant. It appears that the Lords of the Committee of Privy Council for Trade wish the off-door of all carriages to be locked: I am instructed by our Directors respectfully to state, that their opinion has always been decidedly opposed to locking either door of passenger-carriages, and consequently they have never adopted it.

Their stations at Leicester, too, being both on the same side, would render such a practice on this line very inconvenient.

I am directed to inquire whether, when the practice of locking has never been adopted, it is their Lordships' wish that it should henceforth be practised.

Might I be allowed to suggest, that a low-paled fence, of about five feet high, between the line of rails on which the carriages stand at the stations, for the length of a train, and the line next to it, on which it is possible an engine may pass, during the time of carriages remaining stationary, would not be as effectual for all practical purposes as locking the doors. This is a part of the plan I mentioned to you some weeks ago, which we had adopted to pen in a train at the Trent Junction, and we find it answer perfectly.

I have, &c.

S. Laing, Esq.

(signed) J. F. Bell, Secretary.

YORK AND NORTH MIDLAND RAILWAY.

York, 1 June 1842.

THIS Board having taken into consideration a letter addressed to the secretary from the Railway Department of the Board of Trade, referring to the recent disaster on the Paris and Versailles Railway communicating the opinion of Major-general Pasley, that it is proper and useful to lock all the carriage-doors on the off-side, towards the middle of the railway, where the passengers might be crushed by a train moving on the other line of railway, expressing the opinion of the Lords of the Privy Council, that the course recommended by Major-general Pasley, should be invariably adopted;

Resolved,—That the secretary be directed to state to the Railway Department of the Board of Trade, that it has hitherto been the practice of the York and North Midland Railway Company not to lock either of the carriage-doors, and no dangerous consequences have arisen from that cause; but if it be the pleasure of their Lordships that Major-general Pasley's recommendation on this point shall be adopted in future, this Board respectfully requests that it may be furnished with their Lordships' instructions to that effect.

(signed) G. B.

EASTERN COUNTIES RAILWAY.

Sir,

Shoreditch, 1 June 1842.

I BEG to acknowledge the receipt of your letter of the 26th instant, and, in reply, I am desired by the Directors to state, for the information of the Lords of the Committee of Privy Council for Trade, that the practice of this Company has been almost ever since the first opening of the line to leave all the doors of the carriages used on this railway unlocked. This practice has been adopted, after due consideration of all the circumstances affecting the safety of the public travelling on this line; and the Directors are of opinion, that, taking into consideration all the probable circumstances which may attend railway accidents, the same reasons which render it desirable to leave the doors on one side of the carriages unlocked, equally apply to the doors on the other side; for in case of any very serious accident which may render it expedient for the passengers rapidly to leave the carriages, it is by no means unlikely that that accident might be such as to prevent egress on the side left unlocked, and thereby render the plan nugatory. Nevertheless, the Directors are aware that the plan of leaving the doors unlocked on the side of the carriages nearest the centre of the railway is liable to some objections, and may give rise to individual cases of accident, by the imprudence of passengers prompting them to quit the carriages on the more dangerous side, and thereby receive injury from a train passing along the other line of rails. As both plans are liable to some objection, the Directors are quite willing to adopt whichever course the Lords of the Board of Trade recommend. The Directors, however, have never had the least reason to doubt, that the plan they have hitherto followed is the most agreeable to the passengers, and the most proper to be adopted, as far as ordinary prudence can dictate, or present experience guide them.

I have, &c.

S. Laing, Esq.

(signed) Anthony Bulkeley.

SHEFFIELD

SHEFFIELD AND ROTHERHAM RAILWAY.

Sir,

Sheffield, 27 May 1842.

I DULY received your favour of yesterday, and will take care to call the attention of our Directors to the suggestions recommended by the Board of Trade, and to Major-general Pasley's report.

On our Railway the carriage-doors are never locked. Persons travelling are cautioned not to get out, or even open the door, on the off-side, unless so desired by a servant of the Company.

S. Laing, Esq.

I am, &c.
(signed) *Thos. Pearson*, Secretary.

BOLTON AND PRESTON RAILWAY ; BOLTON AND LEIGH RAILWAY ;
KENYON AND LEIGH JUNCTION RAILWAY.

Sir,

Bolton, 28 May 1842.

IN reply to your circular of the 26th instant, I beg to state, that the doors of the carriages on these lines never have been locked ; and as they are all at present single lines, with a trifling exception, there is no reason for locking either of the doors.

S. Laing, Esq., Board of Trade.

I am, &c.
(signed) *Peter Sinclair*.

GLASGOW AND AYR RAILWAY.

Sir,

Glasgow, 30 May 1842.

I HAVE the honour to acknowledge the receipt of your circular letter of the 26th instant. It has never been the practice on this line to lock any of the doors of the carriages since it was opened.

S. Laing, Esq.,
Railway Department, Board of Trade.

I remain, &c.
(signed) *J. F. Smith*, Secty.

HARTLEPOOL DOCK AND RAILWAY.

Sir,

Hartlepool.

I BEG to acknowledge the receipt of your letter of the 26th instant, conveying the wishes of the Lords of the Committee of Privy Council for Trade relative to the practice of locking the doors of railway carriages ; and I have to inform you, that I shall call the attention of the committee of the Hartlepool Dock and Railway Company, at their next meeting, to the subject.

I may state, that hitherto it has never been the practice to fasten the doors of the railway carriages on the Hartlepool Railway.

S. Laing, Esq.

I am, &c.
(signed) *William Dawson*.

NORTHERN AND EASTERN RAILWAY.

Sir,

Shoreditch, 2 June 1842.

I AM instructed by the Directors of this Company to inform you, in reply to your letter of the 26th ultimo, that the practice is not adopted on this railway of locking the carriage doors.

S. Laing, Esq.

I have, &c.
(signed) *Wm. Bourne*, Secty.

DUBLIN AND KINGSTOWN RAILWAY.

Sir,

Dublin, 3 June 1842.

I HAVE the honour to acknowledge the receipt of your letter of the 26th ultimo, communicating the opinion of Major-general Pasley, Inspector-general of Railways, on the subject of shutting in Railway passengers, by locking the doors of the coaches, and relative to the practice of using two engines with one train, and recommending that these opinions of the Inspector-general should be adopted by this Company; and, having submitted your letter to the Directors, I am desired to return their thanks to the Board of Trade for the communication, and to add, that neither of the practices referred to have ever been in use on this line.

None of the coach-doors have locks, and invariably, whenever the number of coaches required to be despatched is greater than could be moved by one engine, they are divided into different trains, and despatched at intervals of 15 minutes.

I have, &c.

S. Laing, Esq., Board of Trade.

(signed) J. F. Bergin.

ULSTER RAILWAY.

Sir,

Belfast, 2 June 1842.

I HAVE the honour to acknowledge receipt of your circular of the 26th ultimo, and to inform you, that the Directors of this Company had anticipated the suggestion of the Lords of the Committee of Privy Council for Trade in respect to the locking the doors of the carriages, and had discontinued the practice.

I have, &c.

S. Laing, Esq.

(signed) J. G. Smith, Secty.

LETTER sent to the following Railway Companies.

Hull and Selby.
Great North of England.
York and North Midland.
Midland Counties.
Eastern Counties.

Sheffield and Rotherham.
Bolton and Preston.
Bolton and Leigh.
Glasgow and Ayr.
Northern and Eastern.

Sir,

Railway Department, Board of Trade,
Whitehall, 1842.

IN reply to your letter of the , I am directed by the Lords of the Committee of Privy Council for Trade to inform you, that, in expressing a decided opinion that both doors should not be locked, their Lordships do not wish to interfere with the discretion of the Directors as to locking none of the doors, in case that they are convinced that such a course is not calculated, under the peculiar circumstances of the Railway, to promote the public safety.

I am, &c.

The Secretary of the

Railway Company.

(signed) S. Laing.

CHESTER AND BIRKENHEAD RAILWAY.

My Lords,

Liverpool, 30 May 1842.

IN reply to your Lordships' letter of the 26th instant, on the subject of locking up the carriages, I am instructed by the Directors of this Company to respectfully reply, that the first and second class carriages have never been locked on both sides, but third-class carriages, which are open stand-up carriages, have been locked on both sides, and the Directors feel that it would greatly contribute to the safety of the passengers who usually travel by them if both were still locked.

Should, however, this be deemed objectionable by your Lordships, the Directors will alter the plan.

I have, &c.

To the Lords Commissioners of the
Board of Trade.

(signed) Jos^h Mallaby.

Sir,

COMMUNICATION FROM THE BOARD OF TRADE.

7

Railway Department, Board of Trade,
Whitehall, 1 June 1842.

Sir,

IN reply to your letter of the 30th May, I am directed by the Lords of the Committee of Privy Council for Trade to inform you, that as General Pasley is decidedly of opinion that it is objectionable to lock both doors of any Railway-carriage, their Lordships would recommend the Directors of the Chester and Birkenhead Railway Company to alter the plan adopted with regard to their third-class carriages, and to lock the door on the off-side only.

I am, &c.

(signed) S. Laing.

To the Secretary of the Chester and Birkenhead
Railway Company.

GREAT WESTERN RAILWAY.

Railway Station, Paddington,
1 June 1842.

Sir,

IN compliance with the desire of the Lords of the Committee of Privy Council for Trade, as expressed in your circular letter of the 26th ult., the attention of the Directors of this Company has been called to Major-general Pasley's report on the practice of locking the doors of railway carriages, and to their Lordships' opinion upon that subject, as well as upon the danger of using a four-wheeled locomotive engine, coupled with and preceding a six-wheeled engine, when drawing a heavy train. Upon the latter topic it seems only necessary to mention, that there is not one four-wheeled locomotive engine belonging to this Company.

Adverting to the other point, I am desired to acquaint you, that, while the Directors resolve to comply with their Lordships' suggestion, in deference to the supervising authority of the Board of Trade, they feel impelled, by a strong sense of public duty and responsibility, to declare their firm conviction, upon the practical experience of the two systems, that danger, instead of security, may ensue from the course recommended, of travelling with unlocked doors. They trust that it will not seem inconsistent with the respect due to the authority of the Lords of the Committee of Privy Council for Trade, and which they are so prompt to evince on this occasion, if they state generally the grounds on which they differ so materially from the conclusion at which their Lordships appear to have arrived.

I can assert, unhesitatingly, that the practice of locking both doors did not originate with this Company, as has been surmised, from any selfish considerations of mere convenience or saving of money. It was the result of an anxious and careful review of every circumstance affecting public safety, as the paramount object and duty of the Directors, with a desire to promote, at the same time, in subserviency to it, the greatest personal comfort and advantage to travellers with the least obstruction to them, consistently with that security of life and limb which, under the various contingencies of locomotion, must ever demand the calm and considerate reflection of all who are responsible for the management of such traffic.

Upon reference to the few casualties which had occurred upon other railways previously to the opening of the Great Western Line, it was quite apparent that the most serious accidents were solely attributable to the facility of passengers quitting the carriages during the journey, of which, indeed, the deeply-lamented fate of Mr. Huskisson is a sad and memorable instance.

In the evidence given on the Great Western Bill, before the House of Commons, by Mr. Booth, treasurer of the Liverpool and Manchester Railway, long after the opening of that Railway, he recorded, as the only fatal accident which had then occurred, the case of a "man in the second class of carriages, who insisted on jumping out, against the remonstrance of those who were near: he jumped out, and was lamed, and died." Other subsequent accidents were of the same nature, and strongly confirmed the fact of danger and insecurity arising from the same course.

It appeared to the Directors that the risk of such fatal consequences must be greatly augmented in proportion to any increase of speed which would be attained: they also foresaw that, in the event of a train being suddenly thrown from the rails, or suffering from any violent concussion, the alarm of the moment, even after the real cause of it had subsided, would expose the passengers to a still greater danger, by some sudden and simultaneous attempt upon their part to open the doors, and precipitate themselves from the carriages, perhaps while the train might have accelerated motion; possibly even on the brink of some high embankment, or against the parapets of a bridge or viaduct, or the side walls of a tunnel.

Assuming that no such impulse could have time to operate until the train had come actually to rest, the more fearful consequences may be readily imagined to a number of passengers, men, women and children, straggling to the opposite line of rails, should an engine be approaching, while the Company's servants may be actively engaged in repairing the accident, or replacing the engine or carriages on the rails. What might be the aggregate extent of mischief or loss of life under such a panic, it would be impossible to foretell; but the bare supposition of it seems sufficient to justify, if not to demand, a prevention, if any

could be suggested: even the short stoppage of a train on the journey, which will occasionally happen, from some trivial derangement of the machinery of the engine, affords an opportunity for the passengers to alight upon the line from the carriages, which may lead to similar fatal consequences. Another risk was contemplated, which has since, in fact, not unfrequently happened on other lines, that of passengers endangering themselves by endeavouring to mount the steps of the carriages when a train had just started, or, when about to arrive at a station, in attempting to leave the carriages while in motion, by springing towards the platform, and falling in the attempt.

To provide against these and similar casualties, the Directors came to the resolution, that both doors of the carriages ought to be locked while the train was in motion, as a protection to their passengers.

Four years have now elapsed since that course was adopted, and practical experience has proved the wisdom of it. Not one accident has occurred to a passenger travelling by the regular passenger trains on this railway from any such risk. The Company have conveyed upwards of 3,900,000 persons in their passenger trains with locked doors, and the only serious injury sustained during the whole period (excluding, of course, the two accidents to luggage trains at Farringdon Road and Sonning, where there were only open trucks) was the case of a gentleman in a second-class carriage, when travelling by a mail-train in September last, suddenly thrown from the rails, owing to a subsidence of the ground, where the locked door could have no effect whatever upon it.

On the other hand, while it would be improper to pretend to speculate upon the number of accidents which may have been prevented by the plan hitherto adopted of locking both doors, two circumstances must be briefly adverted to, as throwing some light on that part of the subject. In the first place, while the Directors ascribe the freedom from accident for passengers on their line to that precaution, and deduce, as they conceive, strong evidence of security from it, they can further corroborate that view by proving, unhappily, five reverse instances since the opening of the railway in which accidents have occurred on their own line to the conductors, guards, or other servants of the Company, from the mere circumstance of their doors being unlocked, or of their having personal access to or from the carriages, while the train was apparently in slow motion, approaching or leaving a station. I am enabled to affirm, that in each instance they were individuals well practised in their duty, and consequently far less liable to such a casualty than passengers. They were perfectly sober, and the occurrences were in broad day-light. In two cases death ensued, and in two others life was only saved by amputation of the injured limb. If the anxiety of passengers to press forward from the railway carriages as they arrive, even merely to obtain a seat in an omnibus, was only seen and watched with the care and anxiety which is natural to those who are daily witnessing it in practice, the Directors think that more calm consideration would have been given to the comparative advantage and safety of their system.

They adduce the other corroborative proof of the safety of the practice from the Report of the officers of the Board of Trade, addressed to the Earl of Ripon, dated 5th February 1842, and published by order of Parliament, which enumerates more than 20 cases which have occurred of deaths or injuries sustained within the comparatively short period of 16 months, by persons travelling on the trains of different Railway Companies, where one door at least had been left unlocked, each of which was in some degree referable to that cause, or at least might have been avoided if they had been travelling in carriages with locked doors.

It is true that these are principally classed under the head of "accidents attended with personal injury to individuals, owing to their own negligence or misconduct," and may be supposed, therefore, to come within the general description mentioned in Major-general Pasley's report; but can it be justly assumed that Directors of railways are absolved from blame, if, with a foreknowledge of the ignorance or imprudence of those whose safety may be hourly committed to their charge, they fail to provide a remedy or prevention so easy and so simple as the mere fastening of both doors of the carriages during the journey? If it were done only for the purpose of saving the life of a person devoid of common prudence, or reckless from liquor, and therefore incapable of preserving himself, the system would still seem to be warranted, unless it could be shown that greater danger would ensue therefrom to other passengers.

This point brings into prominent view the whole question of the fearful catastrophe on the Paris and Versailles Railway, as claiming most serious consideration in reference to the whole system of railway management.

While this Board attempts to establish the fact that, no accident has hitherto happened in this country from locked doors, and proves, from incontestable authority, that several have occurred from the opposite plan, they do not in the least degree disregard or shrink from the necessity of taking into account and calmly investigating all the circumstances connected with that most appalling event in France as bearing upon the subject.

It has been generally assumed, that the loss of lives on that occasion was augmented in the result by the doors of their carriages having been locked. It must be universally admitted, that that circumstance did not in any way occasion the accident itself, but was merely an accessory cause after the occurrence, aggravating its consequences. Now, the best information which has hitherto been obtained states, that the unprecedented violence of the concussion entirely smashed at the moment the five or six carriages which were next to the two locomotive engines, and it has been related that the carriages were totally consumed by fire within a few minutes. Is it, then, credible, that from the carriages so smashed the mere fastening of a door with lock and key would of itself prevent the egress of a passenger, otherwise capable of motion? It is difficult to divine what must have been the peculiar character

character and construction of such carriages, which were manifestly broken to pieces by the blow, the doors of which were supposed to be kept so fastened by the bare locking with a key, that the passengers were incapable of being extricated! Those who know what is the mere effect of the ordinary racking motion on the best constructed railway carriages, without a blow, can assert that a very slight displacement indeed will either open a door, in spite of being locked, or will effectually fasten a door when unlocked, and obstruct its opening, even although considerable force be applied to it. It would, indeed, be a singular fact, and far beyond ordinary belief, that in any one of the bodies of the Paris and Versailles carriages so smashed both the doors should have been retained in their position, and continue closed by the mere aid of the lock, after such a violent blow, as to prevent the extrication or release of the sufferers from the carriages if they had been still alive. Be this, however, as it may (and the bare contemplation of the possibility of such a case is admitted to be most appalling to the imagination), upon calm reflection it must be inquired if there be any and what similarity in the circumstances leading to or affecting that awful catastrophe, which could in any way apply to a disaster on the Great Western Railway.

The accident itself is justly ascribed to the breakage of an axle on a four-wheeled engine, placed in front of a six-wheeled engine. This view of it appears to have been taken by their Lordships, as explained in the last paragraph of your letter. On the Great Western Railway there are none but six-wheeled engines, and the tenders also almost exclusively have six wheels. The carriages likewise upon the Paris and Versailles Railway were upon four wheels only, and the lightness and slightness of construction not only has been proved by the lamentable extent of the recent accident, but is attested by those who have seen and examined them, as presenting scarcely any obstacle to sudden demolition if thrown from the line of rails, or struck with a violent blow.

The carriages in use upon this line are almost all upon six wheels, of the most solid construction, with an under frame-work, calculated to withstand the most severe shock or collision; the second-class carriages, which travel nearest to the engine, have a larger open space at both sides, above each small wicket-door, affording a much wider scope for escape than the door itself. The windows of the first-class carriages are unusually large, and would, with nearly equal facility, admit the escape of every passenger in case of need; supposing, which is however beyond belief, that the conductors and guards (there being usually four, and sometimes five, with each long train) should be disabled or neglect to attend instantaneously to unlock the door under such pressing circumstances of danger.

There are various other points in detail upon which it seems unnecessary here to dwell which tend to establish the total dissimilarity of the two supposed cases; and it was only after the most mature reflection and discussion since the accident in Paris, that the Directors, being convinced of the safety of locked doors, and seeing distinctly the marked and essential difference between the circumstances of the two lines, came to the resolution to adhere to the practice, the propriety of which they conscientiously believe to be sustained by every view which their own experience or general information has enabled them to take on that most important subject.

Having now touched upon some of those various arguments which have more immediate relation to safety, I am desired to refer concisely to the minor question affecting the comfort and convenience of the public, which has been uniformly studied by the Board of Directors in connexion with the system of locked doors. And here it is of importance to draw the clear distinction between the circumstances of the traffic of this line and that of most other railways in this country. It is well known that one essential peculiarity in it is the general admixture of a very large traffic for short distances between populous towns on the railway, with a considerable traffic between the distant termini of the three lines, embracing a length of nearly 170 miles, traversed by each long train of this Company; numerous passengers travel between Paddington and Windsor, and Reading, and Oxford, as well as between Chippenham or Bath and Bristol, by the same trains, which convey persons for the whole distance between London and Cirencester, or London and Bath, Bristol or Bridgewater; this renders a peculiar arrangement of carriages to be necessarily adopted for each separate traffic; for instance, a passenger for Cirencester must not be admitted to a carriage which is to be left either at Slough or Reading, or which is to travel onward to Bridgewater; nor must a passenger destined to Bath or Bristol be placed in a carriage which is to diverge from the Great Western line at Swindon to proceed towards Cheltenham. Some position must be selected, therefore, in the stations of this line, as of other railways, where, by means of a barrier, and an examination of tickets, passengers only who have paid can be admitted to the carriages, and they can be so separated and directed where to place themselves with reference to their destination, as to avoid confusion or mistake, and prevent any fraud on the Company. The customary system with railways generally is to accomplish that, by placing a policeman at the entrance to the platform, refusing admittance (excepting under special permission) to any but those who are about to travel by the train.

The wish of the Directors upon this line has been to give to passengers and to the public as much latitude as possible at all times in passing on to the platform with friends or servants, allowing them to remain there until the departure of the train, or waiting on the spot in expectation of its arrival, at any station on the line. So long as the carriage-door, by being locked, could form the barrier under the control of the Company's servant, of course inaccessible excepting by the production of a ticket or voucher, almost unlimited freedom was given as a privilege to every individual wishing to attend and witness the arrival or departure of his friends, or to see the working of the traffic. The directors also were thereby

enabled to relieve their passengers at once from the annoyance of keeping their tickets, to be subsequently asked for when alighting to leave the railway (excepting where they had to quit the carriages for refreshment at Swindon, and re-enter them), which system seemed to give almost universal satisfaction, as preventing frequent altercation or disputes about the alleged loss of tickets during the journey. The Company's stations were consequently arranged and constructed so as to admit of the quickest and most convenient egress for passengers, under shelter, without confusion, and with the greatest facility for the delivery and transport of luggage from the train to conveyances in waiting to receive them. Time was saved by collecting the tickets before the hour of departure, instead of waiting to collect them by a protracted stoppage at intermediate stations, or within a short distance of the final arrival of the train, by any stoppage expressly ordered for that purpose. At the same time it would be neither candid nor fair to deny that one ground of complaint has been frequently alleged to the system of locking the doors, in creating a difficulty to those who may urgently require it of getting out at the stations in the course of the journey. To this reasonable objection the Directors have always paid the utmost attention; orders were given to the Company's servants to interpose no difficulty or impediment whatever to any request from a passenger to alight; and although it must be acknowledged that several complaints on that subject were made some months ago, a more general instruction to facilitate that object was issued in the month of March last (of which I herewith forward a copy), and the Directors have reason to believe that no instances have since occurred of any departure from or inattention to their orders. They had already determined to print and circulate that regulation, for the guidance and convenience of all passengers, at the time when your letter was received, under the belief that the general knowledge of it would best accomplish the purpose in view.

The consequences of unlocking the doors will be, that every station or platform must be fenced off, and the passengers alighting required to pass through some narrow gate or channel, to deliver up their tickets for the journey performed; those who may be waiting at intermediate stations to proceed onwards must be kept separate, until the arriving passengers shall have been cleared away with their luggage, and none but persons travelling with tickets can be admitted (excepting under special circumstances) to the platforms. Time will be lost upon the journey, and there will be more frequent disputes about the tickets: passengers must to a great extent be left to alight upon their own knowledge of the stations to which they are destined, inasmuch as they can enter the carriages of their own accord; and those who may require to get out on the journey, must do so upon their own responsibility, or upon the chance of being left behind, if the train is about to start.

These points, it is readily admitted, are all matters of detail and of inferior importance, and would not of themselves weigh for an instant in favour of the practice of locked doors, if it could be shown to be attended with any reasonable chance of danger. They are, however, all of them in some degree inherent in the management of this line, which the Directors believe to have received the general approbation of the public, and, as such, they relinquish the advantages of them with regret, which they are persuaded will be equally felt by the passengers themselves as soon as they perceive the necessary and inconvenient consequences arising from the change of plan suggested by General Pasley's report, and confirmed by the opinion of their Lordships.

It will now become the duty of the Directors, in acting upon the recommendation of the Board of Trade, to do so with the least possible annoyance or discomfort to the public, and they assume that there can be no objection on the part of their Lordships to the carriage-doors remaining locked until the starting of the train from the terminal station of the railway. This may enable the Board partially to relax some of the regulations which would be otherwise necessary to control the admission of passengers to their platform and carriages, and in that case the doors would be only unlocked at the moment of departure of the train. There are some arrangements now to be made at the stations essentially necessary for the security of passengers and for the protection of the Company from fraud, which will require a short intervening period before the new plan is brought into practice, but the Directors hope to be able to commence it early in next week, and no time shall be lost in giving full effect to it.

They desire me to apologize for having trespassed at so much length in vindication of the system of locking both doors of the carriages, which they adopted, and which, for the reasons stated, they still think the safest and the wisest course. They yield their own opinions in deference to that of the Board of Trade, and merely desire to record, by this letter, that the responsibility of any consequences ensuing from it must not attach to them, while they will anxiously devote themselves to pursue the same object of endeavouring to avert every chance of danger or injury, and to secure every reasonable advantage or convenience to the public in the management of their traffic upon their line.

I have, &c.

S. Laing, Esq.
Railway Department, Board of Trade.

(signed) Chas. A. Saunders.

Great Western Railway,
London Terminus, Paddington, 15 March 1842.

COMPLAINTS having been recently made of the refusal by attendants on the trains to open the carriage-doors, to enable passengers to alight when they may, from unavoidable causes, require so to do, I am desired to give the most strict orders to all conductors and guards, that they instantly comply with any application from a passenger who may be desirous of getting out for such purposes whenever the stoppage of the train will permit it, and more especially at all the stations where the engine may have to take in water, or where delay may, from any other cause, be likely to take place: while the conductor and guards act with the utmost promptitude in opening the door of the carriage for any such purpose, they may, of course, represent to the passenger the necessity of his resuming his seat as quickly as possible, to prevent delay to the train, or the loss of his journey.

(signed) *Chas A. Saunders,*
Genl Superint of the Line.

RAILWAYS.

COPIES of COMMUNICATION from the BOARD of
TRADE to the RAILWAY COMPANIES, and of
REPLIES thereto, in reference to locking both the
Doors of Railway Carriages.

(*Sir Robert Harry Inglis.*)

*Ordered, by The House of Commons, to be Printed,
14 June 1842.*

329.

Under 2 oz.

REPORT

OF

THE OFFICERS

[Report from Railway Department, 1842.]

The Plans referred to in this Report will be delivered,
as a Supplement, in a few days.

TO THE RIGHT HONOURABLE THE EARL OF RIPON,
PRESIDENT OF THE BOARD OF TRADE.

1842.

Presented to both Houses of Parliament by Command of Her Majesty.

LONDON:
PRINTED BY WILLIAM CLOWES AND SONS, STAMFORD STREET,
FOR HER MAJESTY'S STATIONERY OFFICE.

1842.

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REPORT.

MY LORD,

Railway Department,
Board of Trade, February 5, 1842.

In compliance with your Lordship's instructions, we have the honour to submit the following Report on the proceedings of the Railway Department during the past year.

1. With regard to the prevention of accidents.

The following Table will show the number and nature of accidents upon railways attended with personal injury which have been reported to this department under the provisions of the Act 3 and 4 Vict. c. 97, for regulating railways.

CLASS No. 1.

ACCIDENTS attended with Personal Injury or Danger to the Public, arising from Causes beyond the control of Passengers.

Class No. 1.

Accidents attended with personal injury or danger to the public.

NOTE.—This Return is necessarily incomplete, since the provisions of Lord Seymour's Act do not enable the Board of Trade to obtain Returns of Accidents attended with Danger to the Public, unless Personal Injury is actually sustained.

Date.	Name of Railway.	Number of Persons		Nature of Accident.
		Killed.	Injured.	
1840.				
Aug. 7	Hull and Selby	5	9	An iron casting fell from a goods' truck, and threw the train off the line.
" 7	South Western . . . . .	..	several	Collision.
" 11	Ditto . . . . .	..	several	Ditto.
" 15	Newcastle and Carlisle . . . . .	..	3	Fracture of connecting rod of engine.
" 19	Ditto . . . . .	..	2	Fracture of axle of a goods' truck.
" 19	Eastern Counties	4	6	Train off the line.
" 19	Edinburgh and Dalkeith . . . . .	..	1	Collision at a crossing.
" 31	Grand Junction . . . . .	..	2 or 3	Train off the line.
Sept. 2	Bolton and Leigh	1	..	Run over at a crossing.
" 7	Hull and Selby . . . . .	..	3	Train ran into station.
" 8	North Midland . . . . .	..	several	Collision with a crane left on the line.
" 13	Ditto	2	5 or 6	Train off the line (broken axle).
" 13	Eastern Counties	1	5 or 6	Collision at a station.
" 14	Midland Counties . . . . .	..	1	Collision.
" 24	Branding Junction . . . . .	..	1	Collision at a crossing.
	Total for two months } 12 accidents . . . }	13	41	and upwards.
1840.				
Oct. 17	South Western	1	a great No., upwards of 60	Collision at a station.
" 25	Great Western	1	4	Train ran into station.
" 26	Birmingham and Gloucester	1	..	Run over.
Nov. 3	Durham and Sunderland . . . . .	..	2	Collision.
" 11	York and North Midland	2	2	Collision at a station.
" 15	Midland Counties . . . . .	..	8	Train off the rails.
" 12	London and Birmingham	2	..	Collision.
" 15	Eastern Counties . . . . .	..	4	Ditto.
" 18	Slamannan . . . . .	..	1	Ditto.
" 24	Stockton and Darlington . . . . .	..	1	Outside passenger fell off.
" 25	York and North Midland . . . . .	..	1	Fell out of the 3rd class carriage.
Dec. 2	Birmingham and Derby	1	3	Collision with a truck.
" 16	Lancaster and Preston Junction	1	..	Collision with a ballast waggon.
" 17	Slamannan . . . . .	..	1	Wheel broke.
" 23	Hull and Selby . . . . .	..	2	Train off the line (broken axle).
" 23	Newcastle and Carlisle . . . . .	..	1	Engine off the line (points wrong).
	Total for three months } 16 accidents . . . }	9	90	and upwards.
1841.				
Jan. 5	Garnkirk and Glasgow . . . . .	..	several	Train off the line (axle breaking).
" 14	Monkland and Kirkintilloch . . . . .	..	2	Collision.
" 20	Birmingham and Gloucester	1	..	Train off the line, owing to a slip of earth.
Feb. 3	St. Helen's and Runcorn Gap	1	..	Run over at a crossing.
" 11	Grand Junction	1	..	Collision at a station.
" 12	Arbroath and Forfar . . . . .	..	5	Collision.
" 15	South Western . . . . .	..	..	Collision (no person injured).
" 15	Great Western . . . . .	..	1	Braking of a wheel.
Mar. 26	Manchester and Leeds	1	2	Collision.
	Total for three months } 9 accidents . . . }	4	10	and upwards.

REPORT OF THE OFFICERS

Class No. I. (continued).

Date.	Name of Railway.	Number of Persons		Nature of Accident.
		Killed.	Injured.	
1841.				
May 10	Newcastle and Carlisle . . . .	..	1	Train off the line.
„ 16	Eastern Counties . . . . .	..	1	Ditto (points wrong).
„ 28	London and Greenwich . . . .	..	2	Ditto.
„ 31	Stockton and Darlington	1	..	Fell off and run over.
June 3	Sheffield and Rotherham	2	..	Train upset by the breaking of an axle of a tender.
	Total for three months } 5 accidents }	3	4	
July 16	Taff Vale	1	..	Collision.
„ 18	Newcastle and Shields . . . .	..	1	Fell off.
Aug. 9	Dublin and Kingstown	1	..	Run over at a station.
Sept. 7	North Union	1	9	Collision with a coach at a crossing.
„ 7	Ditto . . . . .	..	10	Collision.
„ 7	Great Western . . . . .	..	1	Train off the line.
„ 11	Bristol and Exeter . . . . .	..	3	Collision with a coach at a crossing.
	Total for three months } 6 accidents }	3	24	
1841.				
Oct. 2	London and Brighton	4	2	Train off the line.
„ 16	South Western . . . . .	..	1	Collision.
„ 27	Manchester and Leeds . . . . .	..	1	Fell out of a 3rd class carriage by the door opening.
Nov. 17	South Western . . . . .	..	3	Collision with a contractor's ballast engine.
Dec. 4	Liverpool and Manchester . . . .	..	1	Run over at a station.
„ 17	London and Croydon . . . . .	..	13	Collision at a station.
„ 21	Liverpool and Manchester	1	..	Run over at a crossing.
„ 22	Great Western . . . . .	..	1	Fell out of 3rd class carriage.
„ 24	Ditto	9	12	Slip of earth suddenly stopping the train.
	Total for three months } 9 accidents }	14	34	
	Total for the year 1841, } 29 accidents }	24	72	

Class No. 2.

Accidents attended with personal injury to individuals.

CLASS II.

Accidents attended with Personal Injury to Individuals owing to their own negligence or misconduct.

Date.	Name of Railway.	Number of Persons		Nature of Accident.
		Killed.	Injured.	
1840				
Aug. 16	London and Brighton (Shoreham Branch.)	..	1	Jumped off after his hat.
„ 24	Midland Counties	1	..	Run over (asleep between the rails).
„ 28	Edinburgh and Dalkeith . . . .	..	1	Ditto ditto.
Sept. 1	Ditto . . . . .	..	1	Fell off; boy stealing a ride on the step.
„ 7	Bolton and Leigh . . . . .	..	1	Fell off; boy riding without leave.
„ 13	Liverpool and Manchester . . . .	..	1	Run over, mounting a train in motion.
„ 18	Glasgow and Ayr	1	..	Run over; boy riding without leave.
„ 3	Ditto	1	..	Run over; labourer crossing before an engine.
„ 3		..	1	Jumped off after his hat.
	Total for two months } 9 accidents }	3	6	
1840				
Oct. 7	Arbroath and Forfar	1	..	Run over, trespassing on the line.
„ 9	Slamannan	1	..	Crushed by an engine in riding behind a train without leave.
„ 21	Clarence	1	..	Run over, drunk and asleep on the rails.
„ 22	Preston and Wyre . . . . .	..	1	Run over, crossing before an engine.
„ 24	Dundee and Arbroath . . . . .	..	1	Jumped off.
Dec. 4	Edinburgh and Dalkeith . . . .	..	1	Ditto.
„ 28	Dublin and Kingston . . . . .	..	1	Ditto.
	Total for three months } 7 accidents }	3	4	
1841				
Jan. 2	Manchester and Leeds . . . . .	..	1	Jumped off after his hat.
„ 12	Stockton and Darlington	1	..	Run over, trespassing.
Feb. 6	Clarence . . . . .	..	1	Jumped off.
„ 24	St. Helen's and Runcorn Gap . . .	1	..	Run over; a boy trespassing.
„ 25	Branding Junction	1	..	Fell off in attempting to cross to another carriage.
„ 26	Great Western	1	..	Run over, crossing before a train.
Mar. 2	Manchester and Leeds . . . . .	..	1	Jumped off.
„ 13	Newcastle and Shields . . . . .	..	1	Ditto.
„ 16	Stockton and Darlington . . . .	..	1	Run over, lying on the rails drunk.
„ 26	Maryport and Carlisle . . . . .	..	1	Fell off, riding on a truck.
	Total for three months } 10 accidents }	4	6	

OF THE RAILWAY DEPARTMENT.

v

Accidents attended with Personal Injury to Individuals, &c.—continued.

Date.	Name of Railway.	Number of Persons		Nature of Accident.
		Killed.	Injured.	
1841				
April 4	Monkland and Kirkintilloch . . . .	..	1	Jumped off.
" 8	Whitby and Pickering	1	..	Run over, trespassing and drunk.
" 11	Eastern Counties . . . .	..	1	Run over.
" 23	Dundee and Newtyle	1	..	Run over, porter neglecting signal to start.
May 6	Midland Counties	1	..	Run over.
" 31	Ditto . . . .	..	1	Jumped off.
	Total for three months 6 accidents	3	3	
July 10	Monkland and Kirkintilloch	1	..	Run over, crossing before engine.
" 21	Ballochney . . . .	..	1	Girl trespassing on the line.
" 22	Ulster . . . .	..	1	Jumped off.
Aug. 2	Newcastle and Carlisle	1	..	Run over, crossing before an engine.
" 15	Dublin and Kingstown . . . .	..	1	Ditto ditto
Sept. 13	Glasgow and Paisley . . . .	..	1	Run over, attempting to get into a train in motion.
" 25	Manchester and Leeds . . . .	..	1	Run over, asleep on the rails drunk.
" 30	Dublin and Kingstown . . . .	..	1	Jumped off.
	Total for three months 8 accidents	2	6	
Oct. 11	Ulster	1	..	Jumped off.
" 11	Dundee and Arbroath	1	..	Run over, crossing in front of a train.
" 13	Stockton and Darlington	1	..	Run over, trespassing.
" 17	Midland Counties	1	..	Ditto ditto.
" 19	Glasgow and Greenock	1	..	Ditto ditto.
" 22	North Union . . . .	..	1	Knocked down by train, trespassing.
" 27	Grand Junction	1	..	Getting into a train in motion.
" 28	Ditto	1	..	Jumped off, train in motion.
Nov. 6	Preston and Wyre	1	..	Fell off, riding in a truck unknown to the guard.
" 28	Manchester and Leeds . . . .	..	2	Run over.
Dec. 13	Durham and Sunderland . . . .	..	1	Run over, boy riding without leave.
" 17	Stockton and Darlington . . . .	..	1	Run over, trying to get into a train in motion.
	Total for three months 12 accidents	8	5	
	Total for the year 1841 36 accidents	17	20	

CLASS No. 3.

ACCIDENTS attended with Personal Injury to Servants of the Company, under circumstances not involving Danger to the Public.

NOTE.—This Return is incomplete, as the Board of Trade has not called upon Railway Companies to make returns of accidents which are not of a public nature.

Class No. 3.

Accidents attended with personal injury to servants of the company.

Date.	Name of Railway.	Number of Persons		Nature of Accident.	Remarks.
		Killed.	Injured.		
1840.					
Aug. 8	Midland Counties . . . .	..	1	Jumped off	Policeman.
" 15	Liverpool and Manchester	1	..	Ditto	Platelay.
" 26	Ulster	1	..	Fell off	Porter.
" 28	Bolton and Leigh . . . .	..	1	Ditto	Breaksman.
" 29	North Union	1	..	Run over	Platelay.
Sept. 10	Eastern Counties	1	..	Ditto	Cokeman.
" 16	Chester and Crewe	2	..	Fell off.	
	Total for two months seven accidents	6	2		
Oct. 3	Stockton and Darlington	1	..	Run over	Engine-wright.
" 9	Manchester and Leeds . . . .	..	1	Fell off	Guard.
" 9	Grand Junction	1	..	Crushed	Workman.
" 12	Ditto . . . .	..	1	Ditto by an engine.	
" 12	Monkland and Kirkintilloch . . . .	..	1	Fell off	Driver.
" 14	Stockton and Darlington . . . .	..	1	Fell in getting off	Ditto.
" 15	Bolton and Leigh . . . .	..	1	Collision	Driver.
" 17	Canterbury and Whitstable	1	..	Train running into station .	Ditto.
" 22	Ballochney	1	..	Run over	Fireman.
" 29	Monkland and Kirkintilloch . . . .	..	1	Crushed by waggon	Ditto.
Nov. 2	Ditto . . . .	..	1	Head crushed	Engine-man.
" 2	Great Western . . . .	..	1	Head cru-hed	Fireman.
" 9	Grand Junction	1	..	Crushed between waggons .	Breaksman.
" 10	Birmingham and Gloucester	2	5 or 6	Bursting of a boiler.	
" 12	York and North Midland . . . .	..	1	Fell off	Breakaman.
" 13	Ditto . . . .	..	1	Struck by a bridge	Guard.
" 17	South Western	1	..	Run over	Foreman.
" 18	Grand Junction . . . .	..	1	Crushed by engine	Ditto.
" 21	North Union . . . .	..	1	Ditto	Ditto.
" 22	Grand Junction . . . .	..	1	Run over	Ditto.
" 24	Glasgow and Ayr	1	..	Ditto	Labourer.
" 27	London and Blackwall	1	..	Ditto	Platelay.
	Carried forward	10	18		

REPORT OF THE OFFICERS

Accidents attended with Personal Injury to Servants of the Company, &c.—continued.

Date.	Name of Railway.	Number of Persons		Nature of Accident.	Remarks.
		Killed.	Injured.		
	Brought forward	10	18		
Nov. 28	Midland Counties	1	..	Run over	Platelayer.
" 30	Bolton and Leigh . . . . .	..	1	Crushed between waggons .	Fireman.
Dec. 5	Arbroath and Forfar . . . . .	..	3	Collision	Drivers.
" 15	London and Croydon . . . . .	..	1	Run over	Labourer.
" 16	Midland Counties	1	..	Ditto	Ditto.
" 16	St. Helen's and Runcorn Gap . .	..	1	Crushed between engine and tender.	Fireman.
	Total for three months } 28 accidents	12	24		
1841.					
Jan. 1	Bolton and Leigh . . . . .	..	1	Run over	Breaksman.
" 12	London and Blackwall	1	..	Ditto	Clerk.
Feb. 22	Glasgow and Ayr . . . . .	..	1	Crushed between two trucks	Guard.
March 1	Great Western . . . . .	..	1	Run over	Policeman.
" 3	Glasgow and Ayr	1	..	Ditto	Labourer.
" 3	Ballochney	1	..	Fell off	Driver.
" 9	Northern and Eastern . . . . .	..	1	Run over	Platelayer.
" 9	Birmingham and Gloucester . .	1	..	Ditto	Labourer.
" 20	Monkland and Kirkintilloch . . .	..	1	Hand crushed	Breaksman.
" 20	Liverpool and Manchester	1	..	Run over	Watchman.
" 23	Grand Junction . . . . .	..	1	Fell off	Guard.
" 25	North Union	1	..	Ditto	Servant of Company.
" 25	Ballochney	1	..	Run over	Ditto.
" 30	Monkland and Kirkintilloch . . .	..	1	Ditto	Driver.
" 30	Garnkirk and Glasgow	1	..	Jumped off	Waggoner.
	Total for three months } 15 accidents	8	7		
April 2	Glasgow and Greenock	1	..	Struck against a bridge . .	Guard.
" 7	Birmingham and Gloucester . . .	1	4	Bursting of boiler	Superintendent of locomotives killed, engineman, fireman, & others injured.
" 14	Brandling Junction	1	..	Run over	Platelayer.
" 14	Dundee and Newtyle . . . . .	..	1	Waggon overturned	Waggoner.
" 16	Ballochney	1	..	Run over	Switchman.
" 19	Whitby and Pickering	1	..	Ditto	Waggoner.
" 27	Midland Counties . . . . .	..	1	Ditto	Policeman.
" 27	Birmingham and Gloucester . . .	1	..	Fell off	Train Porter.
May 5	Monkland and Kirkintilloch . . .	..	1	Run over	Driver.
" 10	Wishaw and Coltness	1	..	Run over	Platelayer.
" 26	Edinburgh and Dalkeith	1	..	Ditto	Driver of horse waggon.
June 1	Great North of England . . . . .	..	1	Fell off	Guard.
" 4	Bolton and Preston . . . . .	..	1	Struck by bridge	Engine driver.
" 4	Liverpool and Manchester . . . . .	..	1	Run over	Coach porter.
" 19	St. Helen's and Runcorn Gap . . .	..	1	Concussion	Porter.
" 21	Wishaw and Coltness . . . . .	..	1	Run over	Labourer.
" 22	Liverpool and Manchester . . . . .	..	1	Lorry overturned	Labourer on the line.
	Total for three months } 17 accidents	9	13		
July 3	Grand Junction	1	..	Run over	Errand boy.
" 7	Liverpool and Manchester	1	..	Jumped off	Porter.
" 9	Wishaw and Coltness	1	..	Run over	Collier.
" 17	Stockton and Darlington . . . . .	..	1	Crushed	Labourer.
Aug. 4	Ballochney . . . . .	..	1	Run over	Guard.
" 18	Edinburgh and Dalkeith . . . . .	..	1	Fell off	Driver of horse waggon.
" 20	Hull and Selby . . . . .	..	1	Fell in getting off	Fireman.
" 27	North Union	1	..	Jumped off	Servant.
Sept. 10	Manchester and Birmingham . . .	..	1	Run over	Platelayer.
" 18	Eastern Counties . . . . .	..	1	Ditto	Pointsman getting off an engine.
" 22	Glasgow and Paisley	1	..	Ditto	Policeman.
	Total for three months } 11 accidents	5	6		
Oct. 8	Liverpool and Manchester . . . . .	..	1	Jumped off	Labourer.
" 5	Wishaw and Coltness . . . . .	..	1	Run over	Ditto.
" 6	Hull and Selby	1	..	Ditto	Gatekeeper.
" 14	Liverpool and Manchester	1	..	Ditto	Labourer crossing before an engine.
" 19	St. Helen's and Runcorn Gap . . .	1	..	Ditto	Driver of horse waggon.
" 22	Manchester and Leeds	1	..	Ditto	Labourer.
" 25	Stockton and Darlington . . . . .	..	1	Jumped off	Night watchman.
" 27	Newcastle and Carlisle	1	..	Run over	Gatekeeper.
" 29	London and Blackwall . . . . .	..	1	Ditto	Labourer.
Nov. 27	London and Croydon	1	..	Struck by a bridge	Porter.
" 27	Clarence . . . . .	..	1	Fell off	Fireman.
Dec. 4	Manchester and Leeds . . . . .	..	1	Crushed between 2 waggons	Luggage guard.
" 7	Bolton and Leigh . . . . .	..	1	Hand crushed	Breaksman.
" 6	Dundee and Arbroath . . . . .	..	1	Fell off	Porter.
" 10	Great North of England	1	..	Run over	Platelayer.
" 11	Ballochney . . . . .	..	1	Ditto	Switchman.
" 21	Bolton and Leigh . . . . .	..	1	Ditto	Fireman.
	Total for three months } 17 accidents	7	10		
	Total for the year 1841 } 60 accidents	28	36		

From this return, it appears that the number of railway accidents of a public nature has considerably diminished, the last five months of the year 1840 showing 28 accidents, 22 deaths, and 131 cases of injury, while the 12 months of 1841 give only 29 accidents, 24 deaths, and 71 cases of injury.

Nor should it be forgotten in making the comparison, that the end of the present year has been remarkable for a succession of weather most unfavourable for railways, and that several of the most serious accidents, including those in the Great Western and Brighton lines, would in all probability not have occurred but for this circumstance.

It is very satisfactory to observe, that a marked diminution has taken place in the class of accidents, such as collisions, arising chiefly from mismanagement or defective arrangements. A great proportion of the accidents which occurred in the end of 1840 and beginning of 1841, were of this nature, no fewer than 17 accidents having occurred in eight months, from August 1840 to April 1841, from the single cause of collisions by trains or engines overtaking others travelling on the same line. During the nine months from April 1841 to January 1842, only five collisions of this nature occurred, and those with one exception unattended with fatal consequences. This diminution in the number of collisions appears too great to be the result of accident, and may fairly be attributed in a considerable degree to the more general adoption of the precautions suggested by the Inspector-General and recommended by this Department, viz., the erection of proper fixed signals at stations, the adoption of a better description of tail-lamps and hand-signals, the enforcement of more attention to signals on the part of servants, and the adoption of proper time tables for all trains, including luggage trains, with a view to preserving regularity in the traffic, and proper intervals between successive trains.

The returns of the past year also show a marked diminution in the number of serious accidents occasioned by the misconduct of engine-drivers, as will appear from the following table :—

ACCIDENTS occasioned by the Misconduct of Engine-Drivers.

Date.	Name of Railway.	Number of Persons		Nature of Accident.
		Killed.	Injured.	
1840				
Aug. 19	Eastern Counties	4	6	Recklessness in driving at an excessive speed. The fault, however, was partly that of the Company, for not giving proper instructions as to the rate of speed.
Sept. 7	Hull and Selby . . . . .	..	3	Unskilfulness of driver in not slackening speed soon enough on approaching the terminus.
„ 13	Eastern Counties	1	6	Carelessness in driving too fast, and not keeping a proper look-out.
Oct. 25	Great Western	1	4	Engine-driver supposed to have fallen asleep on the engine.
Nov. 8	Midland Counties . . . . .	..	8	Recklessness in driving too fast over a bad road.
Nov. 11	London and Birmingham	2	..	Recklessness in disregarding signals.
„ 15	Eastern Counties . . . . .	..	4	Recklessness in driving too fast, and not keeping a proper look-out.
1841				
July 16	Taff Vale	1	..	Disobeying regulations by going on the wrong line of rails.
Mar. 26	Manchester and Leeds	1	2	Ditto.
Oct. 16	South Western . . . . .	..	1	Carelessness in not looking out for signals.

Accidents occasioned by the misconduct of engine drivers.

This result may be attributed partly to the beneficial results of more extended experience and of the measures taken by several railway companies, to raise the character of that important class of men, the engine-drivers, and partly to the salutary example of the prosecutions which have been instituted under Lord Seymour's Act.

The returns of accidents made to the Board of Trade and reports of inspectors up to the end of January, 1841, are already published in the return printed by order of the House of Commons, and dated 8th March, 1841. The returns and reports subsequent to that period, together with copies of the correspondence conveying suggestions to railway companies relative to accidents, will be found in the appendix to this Report, p. 1 to 95, containing—

1. Returns of Accidents made by Railway Companies from 1st February, 1841, 1st January, 1842.

2. Reports and Correspondence relative to the following accidents :—

Accident on the Grand Junction Railway	11th February, 1841.
„ Midland Counties Railway	6th May, „
„ Newcastle and Carlisle Railway	10th May, „

Accident on the Eastern Counties Railway	16th May,	1841.
„ London and Greenwich Railway	28th May,	„
„ Sheffield and Rotherham Railway	3rd June,	„
„ Liverpool and Manchester Railway	18th June,	„
„ North Union Railway	7th September,	„
„ Great Western Railway	7th September,	„
„ Bristol and Exeter Railway	11th September,	„
„ London and Brighton Railway	2nd October,	„
„ London and South Western Railway	18th October,	„
„ Great Western Railway	24th December,	„

The most important results deducible from these accidents appear to be—

1. The impropriety of running tender foremost, illustrated by the accident on the Sheffield and Rotherham, and the North Union Railways.
2. The danger of running trains without a sufficient number of breaks and breaksmen.
3. The propriety of using buffer springs with all passengers' carriages, and of giving the sides of open carriages a sufficient height, illustrated by accidents on the Great Western Railway.
4. The necessity for using extreme caution and restricting the speed to a very moderate limit for a considerable period after the first opening of a new line, illustrated by the accident on the London and Brighton and Eastern Counties Railways.
5. The necessity for extreme vigilance in watching the line when the weather has been more than usually unfavourable, and especially in those places where a tendency to slip has been exhibited; illustrated by the accidents on the Great Western Railway of the 24th December and 7th September, and by the accident on the London and Brighton Railway.
6. The propriety of having fixed signals at stations, and tail lamps of the best construction, so situated as not to be liable to be accidentally obscured; illustrated by the collisions on the Grand Junction, the North Union, and the Croydon Railways.
7. The danger of level crossings, and the necessity of enforcing strictly the practice of keeping the gates shut across the turnpike or highway; illustrated by the accidents on the North Union, the Bristol and Exeter, and the Dundee and Arbroath Railways.

Level crossings.

In consequence of the occurrence of the two accidents at level crossings on the North Union and Bristol and Exeter Railways, the following circular letter was issued :—

Railway Department, Board of Trade, Whitehall,
28th September, 1841.

SIR,

THE recent accidents on the North Union and Bristol and Exeter Railways having shown that the precautions necessary to insure safety at crossings of public roads on a level are not always adopted, the Lords of the Committee of Privy Council for Trade direct me to call the especial attention of the Directors of the Railway Company to the subject, and to request that returns may be furnished to the following questions :—

1. How many turnpike roads and highways are crossed on a level by the railway?
2. Are good and sufficient gates erected across each end of such turnpikes or highways at each of such crossings, in conformity with the 2 and 3 Victoria, cap. 45?
3. Are gatekeepers stationed at each of such crossings, in conformity with the said Act?
4. What wages do such gatekeepers receive?—how many hours do they remain on duty?—have they any other employment?
5. Are positive instructions given to such gatekeepers to keep such gates constantly shut across the roads, unless when opened by the gatekeeper to allow carriages, &c., to cross railway?
6. What other instructions are given to such gatekeepers?
7. What instructions are given to engine drivers as to precautions to be observed approaching crossings?

I am, Sir,

Your obedient servant,

G. R. PORTER.

To the Secretary of
the

Railway Company.

The returns to this circular are given in Appendix, p. 95 to 127. It appears from them that there are no fewer than 312 turnpike and public highway roads, crossed on a level by 53 different railways. In a great majority of cases proper gates had been erected and gatekeepers stationed, in compliance with the Act 2 and 3 Vict. c. 45, and proper instructions issued with regard to keeping the gates shut across the road, unless when opened by the gatekeeper to allow carriages, &c. to pass the railway. In 42 cases gates have been erected or altered, and gatekeepers stationed, in consequence of representations from this department; and it is believed that, with the exception of a few railways where horse-power only is used, or where the low rate of speed or other local circumstances render it unnecessary, the provisions of the Act in question are now generally complied with, and the public protected as far as possible against the danger which is always, to a certain extent, incurred by crossings on a level. Some difficulty has arisen in several cases in consequence of clauses in the Acts of various railway companies, obliging them under a penalty to keep the gates at level crossings closed *across the railway*, instead of *across the road*, which latter method is evidently intended by the general Act, and is clearly the most safe. In two instances upon the Hull and Selby, and Newcastle and Carlisle Railways, the lives of the gatekeepers fell a sacrifice to the former plan, which the directors considered themselves obliged to adopt, and a practical proof was given of the utter inutility of a gate closed *across the railway*, as a protection for persons who might happen to be crossing the rails upon the public road. Although there is little doubt that the General Highway Act would be held to supersede the provisions of preceding local Acts, and to justify railway companies in adopting the mode of closing the gates which experience has shown to be most conducive to safety, it would be desirable to set the point at rest by an enactment stating expressly that gates should be erected at every level crossing, and kept shut across each end of the road, unless otherwise ordered by the Board of Trade.

It would be also very desirable that some power should exist to compel the parties interested to come to some arrangement for getting rid of level crossings by a bridge or tunnel, where experience has shown that they occasion a considerable degree of risk to the public. The case of the level crossing over the Glasgow and Ayr Railway by a private coal railway in the town of Newton-Ayr, the details of which are given in the Appendix, p. 96, affords a proof of the necessity for such a power. Without imputing blame to either party for acting on the rights secured to them by Act of Parliament, it is evident that the public safety is seriously endangered by the continuance of the crossing, and that the efforts of the Board of Trade to bring about an arrangement for removing the danger have proved entirely ineffectual.

The correspondence relative to a level crossing on the Croydon Railway affords another instance of an admitted source of danger to the public being continued, in consequence of the inability of the Railway Company and trustees of the road to come to an understanding for removing it.

The correspondence with the Dundee and Arbroath Railway Company (Appendix, p. 95*), relating to the accident by which a woman was killed at a crossing in the village of Westhaven, affords also a strong instance of the necessity of some supervising authority to compel the erection of bridges in cases where railways have been inadvertently allowed by Parliament to traverse the streets of villages, or other populous localities, on a level.

The accident on the Brighton line, and the verdict of the jury at the coroner's inquest condemning four-wheeled engines, having called attention to the comparative safety of four and six-wheeled engines, the following circular was issued by your Lordship's directions, with a view to obtaining authentic information as to the opinions actually held on the subject by those practically conversant with the management of railways.

Locomotive
Engines.

Railway Department, Board of Trade,
Whitehall, October, 1841.

SIR,

THE late accident on the London and Brighton Railway having suggested the importance of collecting information upon the respective merits of the different descriptions of locomotive engines employed upon railways, I am directed by the Lords of the Committee of Privy Council for Trade to request the Directors of the Railway Company to furnish them with returns to the following questions:—

1. What number of engines are employed upon the Railway?
2. What is the construction of such engines, specifying the number of wheels, and their diameter, the weight of the engine, the weight on the front wheels, the construction of the axles and bearings, and any other particulars bearing upon the question of safety?

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3. What are the names of the makers of such engines?
4. What description of engines have the Directors been led by their experience to prefer, and for what reasons?
5. Have the Directors been led by their experience to consider any particular description of engine as peculiarly dangerous, and if so, for what reasons?
6. Are extra engines ever employed upon the Railway in propelling
trains?
7. If so, is the extra engine applied in front of the engine, or behind?
8. Have the Directors been led by their experience to consider the use of an extra engine either in front or behind as an additional source of danger?
9. Are engines ever allowed to run tender foremost upon the Railway?

The Secretary of the

Railway Company.

I am, &c.,

S. LAING.

The returns to this circular, which comprise much valuable information, will be found in Appendix No. VI. p. 189. The following table gives the result as regards the proportions in which four and six-wheeled engines are actually used, and the number of accidents attended with personal injury to the public which may by possibility have been partly occasioned by the peculiar construction of the engine.

Name of Railway.	Number of Six-wheeled Engines.	Number of Four-wheeled Engines.	Number of Miles of Railway open 1st Jan., 1841.	No. of Accidents, attended with personal injury, from 1st August, 1840, to 1st January, 1841, occasioned by Engines running off the Rails without meeting with any obstruction or other specific cause.
Arbroath and Forfar	5	..	15	
Birmingham and Derby	14	..	38½	
Birmingham and Gloucester	26	..	55	
Bolton and Leigh	12	1	9½	
Branding Junction	10	..	25	
Chester and Birkenhead	6	..	14½	
Clarence	9	6	36	
Dublin and Kingstown	8	2	6	
Dundee and Arbroath	6	..	16½	
Eastern Counties . . . . .	..	15	17½	
Edinburgh and Glasgow	10	10	..	One accident, 19th August, 1840—4 killed, 6 injured. Engine ran off the line, speed excessive.
Glasgow and Greenock	12	..	22½	
Glasgow and Ayre	12	8	40	
Grand Junction	67	..	83½	
Great North of England	11	..	45	
Great Western	86	..	118	
Bristol and Exeter			33	
Cheltenham & Great Western			18	
Hull and Selby	14	..	31	
Lancaster and Preston . . . . .	..	6	20½	
Liverpool and Manchester	34	..	31	
London and Brighton	19	6	56	One accident, 2d October, 1841—4 killed, 2 injured. Four-wheeled engine ran off the line, attributed to excessive speed on a new line.
London and Birmingham . . . . .	..	90	112½	
London and Croydon	8	..	10½	
London and Greenwich	5	4	3½	
London and South Western	44	4	77	
Manchester and Birmingham	6	..	5	
Manchester, Bolton and Bury . . . . .	..	10	10	
Manchester and Leeds	34	2	50	
Maryport and Carlisle	2	..	7	
Midland Counties	2	35	57	One accident, 8th November, 1840—8 injured. Four-wheeled engine ran off; line in a bad state.
Newcastle and Carlisle	19	7	61	
Newcastle and North Shields	5	..	7	
Northern and Eastern	8	..	30½	
North Midland	40	..	72½	
North Union	2	15	23	
Stockton and Darlington	33	3	25	
Ulster	7	..	20	
York and North Midland	29	..	27	
Total	605	224	1336½	Three accidents—8 killed, 16 injured.

From the returns made by the different Railway Companies, it will appear that a very general opinion is entertained that four-wheeled engines are rather more unsteady and subject to oscillatory movements, and especially to vertical movements, which in extreme cases may lead to jumping off the rails, while on the other hand six-wheeled engines are thought to be less adapted for going round sharp curves; and if constructed with outside bearings, which are generally used with this description of engine, to be more liable to fracture their axles than four-wheeled engines with inside bearings. A reference to the above table will show that experience does to a small extent bear out the opinion that four-wheeled engines are more liable to run off the rails, but, at the same time, it shows conclusively that no description of engine at present in use upon railways can be pronounced dangerous, not a single accident having occurred in the course of 17 months which can be attributed *solely to the construction of the engine*, and only three in which the construction of the engine can be thought to have contributed even remotely to the accident.

The fact that the two railways, which, in proportion to their amount of passenger-traffic, have been perhaps most free from serious accidents, viz., the London and Birmingham, and the Grand Junction, use in the one case four-wheeled and in the other six-wheeled engines exclusively, appears quite sufficient to show that any attempt at legislative interference to enforce the adoption of any peculiar construction would be in the present state of experience upon the subject altogether misplaced.

Another result, which appears from the returns in the Appendix is, that the practice of running tender foremost is universally pronounced to be dangerous, and that a very general opinion is expressed against propelling trains by an engine from behind where it can be avoided. These opinions are entirely conformable to the recommendations frequently made by the Inspector-General in his Reports, and urged by this Department, and it is believed that the practice of running tender foremost with passenger trains is now almost entirely discontinued, and that the practice of propelling passenger-trains from behind is rarely resorted to.

Another opinion very generally expressed is, that in the case of heavy trains it is better to employ an extra engine a-head than to multiply the chances of collision by dividing the train; but as this opinion may be fairly questioned, and it is certain that trains so heavy as to require the assistance of an extra engine are to a certain extent a source of additional danger, the Board of Trade has not thought it right to offer any general recommendation on the subject.

In consequence of the alarming accident of the 24th December on the Great Western Railway, it has been thought right to institute several inquiries as to the precautions taken to ensure the safety of third-class passengers, and generally as to the effect which the great extension of the railway system has had on the interests of the poorer classes. These inquiries are not yet brought to a conclusion, but some important information has already been obtained.

Third Class
Passengers.

The following Circular letter on the subject was sent to the different Railway Companies.

Railway Department, Board of Trade, Whitehall,
1st January, 1842.

SIR,

In consequence of the recent accident on the Great Western Railway, the Lords of the Committee of Privy Council for Trade have thought it their duty to ascertain whether proper precautions are taken to ensure the safety of the poorer class of passengers upon railways generally; I am therefore directed by their Lordships to request that the Directors of the Railway Company will furnish them with answers to the following questions:—

- 1st. By how many and what description of trains in the course of the 24 hours are third-class passengers taken?
- 2nd. At what hours do such trains start, at what speed do they travel, and how long do they take to perform the journey?
- 3rd. What is the construction of third-class carriages?—Specifying—
 - 1st. Whether provided with springs and spring-buffers, the same as other passenger-carriages?
 - 2nd. Whether closed, partly closed, or open?
 - 3rd. Height of framing or panelling at ends and sides?
 - 4th. Whether any partitions in the body of the carriage, and if so, their height and position?
 - 5th. How many passengers each carriage is constructed to carry?
 - 6th. Whether there are seats for the passengers, and if so, how arranged?
 - 7th. Whether third-class or other passenger-carriages go with trains partly composed of luggage-waggons, are such carriages placed before or behind the luggage-waggons, and is such position invariably preserved, or is it altered according to the weight of the train, and other circumstances?

The Secretary of the

Railway Company.

I have, &c.,
S. LAING.

The returns to this Circular are given in Appendix, No. VII. p. 226.

The following table which is as complete as the imperfect nature of the traffic returns made to the Board of Trade will permit of, shows the extent and nature of the third-class passenger traffic throughout the kingdom:—

TABLE showing the Nature of the Third-class Traffic on the different Railways of the United Kingdom.

Name of Railway.	No. of Trains each way per day for 3rd Class Passengers.	Nature of Trains. <i>Note.</i> "Mixed" denotes, mixed with Passengers of other Classes.	Average Fare of 3rd Class Passengers per Mile, from half yearly Returns to July, 1841.	No. of 3rd Class Passengers carried in 6 Months, from half-yearly Return to July, 1841.	Average Distance each Travelled.
Arbroath and Forfar	4	Mixed	0.968	40,643	..
Birmingham and Derby	3	Ditto	1.25	..	..
Gloucester	4	2 passenger, 2 luggage. . . .	1.25	32,011	12
Brandling Junction . . . . .	..	Mixed	1.06	287,179	..
Chester and Birkenhead	6	Ditto	0.82	100,233	12
Dublin and Kingstown . . . .	..	Ditto	1.	327,652	..
Dundee and Arbroath . . . . .	..	Ditto	1.074	86,505	..
Eastern Counties	8	Ditto	1.46	81,317	9
Glasgow and Ayr	4	Ditto	0.9	141,549	..
Grand Junction	1	Ditto	1.3	20,656	..
Great North of England	4	Ditto	1.33	..	..
Great Western . . . . .	..	Luggage	1.183	12,620	..
Hull and Selby . . . . .	..	Mixed	0.96	52,602	20
Lancaster and Preston	3	Ditto	0.9	31,852	13½
Leeds and Selby	5	Ditto	1.5	29,263	..
Liverpool and Manchester . . . .	..	Ditto	1.27	172,920	..
London and Birmingham	1	With 3rd Class Passengers only. . . .	1.5	24,158	55½
London and Brighton	No 3 Class.	Mixed	Lowest fare 2.	..	..
Croydon	8	Ditto	1.03	18,937	..
Greenwich . . . . .	..	Ditto	1.6	292,066	..
South Western	1	Luggage	1.2	14,751	54
Manchester and Birmingham	12	Ditto	1.2	261,120	5
Manchester and Leeds	10	Ditto	1.37	321,981	11
Midland Counties	2	Ditto	1.	78,252	..
Newcastle and Carlisle	No 3 Class.	Ditto	Lowest fare 1.5	102,886	..
Newcastle and North Shields	12	Ditto	1.25	297,210	..
North Midland	6	Ditto	1.	228,552	16
North Union	No 3 Class.	Ditto	Lowest-fare 1.62	..	..
Northern and Eastern	2	Ditto . . . .	..	..	..
Preston and Wyre	4	Ditto	1.25	42,657	11
Sheffield and Rotherham	12	Ditto	1.	175,128	..
Ulster . . . . .	..	..	0.75	155,945	..

It will be seen from this table, that in a great majority of cases third-class passengers are conveyed by the same trains as other passengers. In fact, the Great Western and London and South Western Railways are the only lines upon which third-class passengers are conveyed exclusively by heavy luggage-trains, and the Directors of the latter railway have signified their intention of discontinuing the practice immediately and providing accommodation for third-class passengers in the regular passenger trains.

Upon the London and Birmingham Railway, third-class passengers are conveyed by a special train along with cattle, horses, and empty return-waggons, but not with heavy luggage-waggons.

Upon all other railways where third-class passengers are carried, they are taken by mixed trains along with other passengers, and are therefore exposed to no peculiar risk except such as may arise from the construction of the carriages in which they are placed.

In all cases in which, from the returns made to this Department, the construction of third-class carriages appeared defective, letters have been written recommending the adoption of buffer-springs, and an increased height of outside panelling as suggested by the Inspector-General in his report on the accident on the Great Western Railway. The Great Western, London and Birmingham, South Western, and other Railway Companies, have at once acceded to their recommendations, and it is hoped, that in future, third-class carriages will be constructed with as much regard to safety as those of any other class.

From the returns made by the different railways, it appears that the following Companies are of opinion, that where luggage-waggons are sent along with passenger-trains, the waggons should be placed *next the engine* :—

Arbroath and Forfar.
Birmingham and Derby.
Birmingham and Gloucester.
Brandling Junction.
Edinburgh and Glasgow.
St. Helen's and Runcorn Gap.
Midland Counties.
Newcastle and Carlisle.
North Midland.
Stockton and Darlington.

The following Railway Companies place the whole of the luggage-waggons *behind*:—

Manchester, Bolton, and Bury.

Bolton and Preston.

Great Western, (until the late accident, since when the passenger-carriages have been placed in a central position).

And the following place the luggage-waggons partly before and partly behind, or have no settled rule, and place them either *before* or *behind*:—

Great North of England, (luggage seldom taken).

London and South Western, (about to discontinue taking passengers with luggage-trains).

Manchester and Leeds.

Sheffield and Rotherham, (generally before).

Upon the following railways, heavy luggage waggons are never sent with passenger-trains:—

Glasgow and Ayr.

Grand Junction.

London and Birmingham.

Liverpool and Manchester.

Lancaster and Preston.

North Union.

Preston and Wyre.

Sheffield and Manchester.

Until all luggage-waggons intended to form part of passenger-trains are constructed with buffer springs, axles of the best material; and in all respects as carefully as passenger-carriages, there can be no doubt that whether placed in the front or the rear of the train, they constitute an additional source of danger; in the former case from the increased risk of collisions, and of a break down from an axle giving way, or a part of the loading falling on the rails as in the case of the accident in August, 1840, on the Hull and Selby Railway; in the latter from the disastrous consequences which ensue from a sudden stoppage in front of the train, with a great weight behind as in the case of the accident on the Great Western.

The only effectual remedy appears to be that passengers should not be sent by very heavy luggage-trains, and that where waggons of any description form part of a passenger-train, they should be provided with buffer springs and have wheels and axles of the best construction.

With regard to the extent of accommodation afforded to the poorer classes by railways, it will be seen from the foregoing table that a large third-class traffic is carried on by most of the lines in the manufacturing districts of Yorkshire and Lancashire, in the coal districts of the North, and in Scotland. These lines are in a great measure dependent upon third-class passengers, who are conveyed by all or nearly all the trains at fares averaging from 1*d.* to 1½*d.* per mile.

The following information respecting the nature of the third-class traffic upon the Manchester and Leeds Railway, for which we are indebted to Captain Lawes, the manager of that line, will afford a fair exemplification of the effect of a railway in a densely-peopled manufacturing district.

The Manchester and Leeds Railway passes through or near 15 towns, between which there were formerly several carts, waggons, and vans passing every hour of the day and night, with manufacturing and market produce, of which the humbler classes could avail themselves at a trifling expence of money and a considerable sacrifice of time. These are now almost entirely swept away, and the market-people load one or more of the railway trucks among them, paying 3*d.* or 4*d.* per ton per mile for their goods, and in many instances less than 1*d.* per mile for themselves. The effect has been to bring a supply of fruit, fish, and vegetables within the reach of those who could never obtain them formerly, and to afford very great advantages to the market-people and towns.

In fine weather respectable tradespeople, clerks, &c., avail themselves of the third-class carriages to a considerable extent; but the great bulk of the half a million of third-class passengers who are carried on this railway in the course of the year are strictly the working-classes, weavers, masons, bricklayers, carpenters, mechanics, and labourers of every description, some of whom used formerly to travel by carts, but the greater number on foot.

The fare from Manchester to London by railway and steam-boat *via* Hull is 14s.; and many of the labouring classes avail themselves of this mode of conveyance, especially during summer. In one respect a remarkable use has been made of the facilities afforded by railway communication. On the occasion of several strikes, when there was a press of work, bodies of workmen have been engaged in London and carried to Manchester, and *vice versa*.

In the case of such a line as the Manchester and Leeds, there can be little doubt that the railway has been a great advantage to the poorer classes; and it may be expected that the interest of the Directors will always prove a sufficient inducement to make them afford every facility for the development of an extensive third-class traffic. But upon the long lines, which form the main lines of communication with the metropolis, and upon which there is a great *through traffic*, the case is very different, and the number of third-class passengers is inconsiderable. The whole number, for instance, of third-class passengers carried on the London and Birmingham and Grand Junction Railways, between London, Manchester, and Liverpool, is less than the number carried by the Arbroath and Forfar Railway, and not a seventh part of the number carried between Newcastle and North Shields.

Upon these lines it may be questionable whether the interest of the proprietors will ever induce them to encourage the development of a large third-class traffic. It is satisfactory, however, to find that there is a growing disposition among railway companies, thus circumstanced, to afford the accommodation of at least one train a-day by which the poorer classes may be conveyed at reduced fares. We are informed that the result of the experiment of running a third-class train upon the London and Birmingham Railway has been very satisfactory, the persons who have availed themselves of it having been, with few exceptions, of a class who could not have afforded to pay second-class fares; and it is expected that the number of this class of passengers will greatly increase when the advantages to be derived from the great saving of time are more generally known. It is right, however, to observe that the advantage to the third-class passengers, in point of time, is often not so great as might be anticipated where the links of communication are formed by distinct lines. For instance, third-class passengers from London to Manchester or Liverpool are detained at Birmingham from three in the afternoon till six next morning. It would be very desirable if, in such cases, arrangements could be made for securing to the public the same advantages which they would have had if the whole line of railway communication had been one undertaking and under one management.

Opening of New Railways.

The following railways have been opened, or partially opened, for public traffic since the passing of the Act for regulating railways, after having been inspected by order of the Board of Trade:—

Date of Opening.	Name of Railway.	Portion Opened.
1840.		
October 30 .	Birmingham and Gloucester	Cheltenham to Gloucester, 6½ miles.
December 14 .	Great Western	17 miles.
„ 15 .	Birmingham and Gloucester	Campmill to Cofton, 8 miles; completing the line.
„ 30 .	Manchester and Leeds	8½ miles.
1841.		
February 1 .	Bolton and Preston	9½ miles; single line of rails.
March 1 . .	Manchester and Leeds	Summit tunnel, 1 mile 5 furlongs; completing the line.
April 21 . .	Taff Vale	8 miles; single line of rails.
May 31 . .	Great Western	13½ miles.
„ . .	Cheltenham and Great Western	13½ miles.
„ . .	Bristol and Exeter	32½ miles.
June 30 . .	Great Western	12½ miles; completing the line.
July 17 . .	Ulster	2½ miles; single line.
„ 12 . .	London and Brighton	28½ miles.
„ 30 . .	London and Blackwall	330 yards.
August 9 . .	Northern and Eastern	7½ miles.
„ 17 . .	Birmingham and Gloucester	Junction with London and Birmingham, 1½ miles.
September 14 .	London and Brighton	13 miles; completing the line.
„ . .	Stockton and Hartlepool	13 miles.
October 4 . .	Ulster	12½ miles; single line.
November 11 .	Sheffield and Manchester	7½ miles; single line of rails.
„ 19 . .	Northern and Eastern	4 miles; single line.
„ 28 . .	Gosport branch of the London and	
Closed again.	South Western	15 miles.
December 22 .	Bolton and Preston	2½ miles; single line.
	Total	{ 179½ miles of double rail. 46 miles single rail.

In addition to which, the Edinburgh and Glasgow Railway, length 46 miles, has been inspected, but found not ready for opening.

The reports relative to the inspection of the first five of the above-mentioned lines which were opened previously to March, 1841, are printed in the returns to the House of Commons made last Session. The reports on the remaining lines are given in the Appendix to this report, No. V. p. 8.

It will be seen from these reports that one line, the Gosport branch of the London and South-Western Railway, was opened, notwithstanding a report from Sir F. Smith stating that, owing to the badness of the weather and the imperfect nature of some of the works, it would be more advisable to postpone the opening, and a recommendation from the Board of Trade to that effect; and that in less than a week's time after the opening it was found necessary to close the line again. It will also be seen that, in a great number of cases, too early a period for opening has been fixed; and it has consequently been found necessary to postpone it from time to time, and finally to appoint a time for inspection before the line was thoroughly completed, and so near to the time of opening as to make it a matter of the greatest difficulty for the inspector to discharge his duty, and frequently to place the Board of Trade under the necessity of accepting a certificate from the engineer or Directors of the Company of the completion of works which ought to have been finished before the line was reported to be ready for inspection.

In order to enable the Board of Trade to discharge the duty of ascertaining that no railway is opened until it is thoroughly completed, and in such a state as to warrant the belief that the public traffic may be conducted upon it with the ordinary degree of safety, it appears essential that some more definite power should be given, first, of requiring a sufficient period for inspection to elapse between the actual completion and the opening; secondly, of postponing the opening in case the report of the inspector should be unfavourable.

Revision of Bye-Laws and Regulations.

The subjoined report will afford the best explanation of the course which has been pursued, and of the principles upon which the Board of Trade has acted in the discharge of the duties imposed upon it by the Act for regulating railways:—

REPORT TO THE RIGHT HON. THE EARL OF RIPON ON THE BYE-LAW JURISDICTION OF THE BOARD OF TRADE.

Railway Department, Board of Trade,

10th November, 1841.

MY LORD,

Existing powers of
making bye-laws
and regulations.

A POWER of making bye-laws or regulations, and of imposing penalties for their enforcement, is invariably given to railway companies by their acts of incorporation. The usual provisions are,

1. That the company shall have power to make "bye-laws, orders, and rules for the good government of the officers and servants of the company, and for regulating the proceedings and reimbursing the expenses of the Directors, and for the management of the undertaking in all respects whatever."

2. That the company shall have power to make "regulations for regulating the travelling upon and use of the railway, and for, or relating to, travellers and carriages passing upon the railway, and the mode and means by which, and the speed at which such carriages shall be moved or propelled, and the times of their arrival and departure, and the loading or unloading thereof, and the weights which they shall carry, and the delivery of goods and other things which shall be conveyed in or upon such carriages, and also for preventing the smoking of tobacco, and the commission of any other nuisance, in or upon any such carriages or in any of the stations of the company, *and generally for regulating the passing upon, using, or working the railway, or in anywise relating thereto.*"

Power to inflict
penalties

and to apprehend
offenders.

Bye-laws, how
made.

Regulations may
be made by the
Directors.

In both cases the company is empowered to impose fines on non-observance of such bye-laws or regulations to an amount which varies from 40s. to 10*l.*, but is generally fixed as "not exceeding 5*l.*" In some cases it is provided that these penalties may be recovered summarily before two justices, and that offenders may be seized by officers of the company without a warrant, so that the power of imposing penalties involves a power of summary imprisonment.

In the first of the clauses above referred to, it is usually provided that such bye-laws as therein mentioned shall be made at *general or special general meetings*; but the latter power, viz., that of making regulations, is vested in the Directors, who are authorized to act in the name of the company. The distinction between "bye-laws" and "regulations" has been generally overlooked, and the terms indiscriminately applied; but it is evident, from the above clauses, that "bye-laws" are, strictly speaking, "rules for the internal management of the corporation, which can only be made or altered by a general meeting of its members," while "regulations" are "rules to be observed by the public using the railway," which may be made or altered by the Directors.

In most of the early Railway Acts the exercise of the extensive powers thus given to Directors was left in a great measure irresponsible, the only check being a clause which provides that the bye-laws and regulations shall contain nothing contrary to the provisions of the Act, or to the law of the land; but in the more recent Acts it was generally provided that the bye-laws and regulations should be sanctioned by the magistrates at quarter sessions, or by the judges at assize.

Sanction of magis-
trates required.
Report of Com-
mittee.

In 1839, the subject was investigated by the Select Committee of the House of Commons on railways, who reported "that it would be far better for the sake of establishing as much as possible one uniform system, and for duly protecting the general liberty of the subject, that some supervising authority in the nature of a Board should be established, to which all bye-laws should be referred, and which might have the power of sanctioning all necessary regulations, and annulling such as were not justified by the peculiar circumstances of the case, or by the general interests of the community."

Lord Seymour's
Act.
Jurisdiction of
Board of Trade.

This recommendation was carried into effect by Lord Seymour's Act, the 3 and 4 Vict. c. 97, which vests a general supervision over railways in the Board of Trade. The 7th, 8th, 9th, and 10th sections of this Act enact,

1. That copies of all existing "bye-laws, orders, rules, or regulations, which impose penalties for their enforcement upon persons other than servants of the Company," are to be laid before the Board of Trade within two calendar months after the passing of the Act, or to become void.

2. That no such bye-laws, &c., made after the passing of the Act are to be valid until two months after they have been laid before the Board of Trade, unless approved of by the Board before such period shall have elapsed.

3. That the Board of Trade may at any time disallow any such bye-law, &c., either before or after it has come into operation.

4. That all provisions of local Acts requiring bye-laws, &c., to be sanctioned by justices or any other authority, be repealed.

The first step taken by the Railway Department under this Act was to issue a circular, calling on all railway companies to make returns of their bye-laws and regulations. Thirty-four railway companies made returns of bye-laws and regulations, and 43 either made no return, or made a return that they had no bye-laws or regulations within the terms of the Act. The returns consist of regulations (there are, strictly speaking, no bye-laws requiring the sanction of a general meeting) relating to a great variety of matters, but reducible into two classes.

1. Regulations relating to matters of local detail, such as the local traffic of coal and goods-waggon upon the railway. Returns made to the Board of Trade.

2. Regulations of a public nature relating to passengers. The latter commonly provide that passengers must take out tickets before taking their seats, and impose penalties on persons who fail to deliver up their tickets when required, or who ride in carriages of a higher class than that for which they have paid, or who proceed beyond the destination for which they have paid. They also very frequently impose penalties on smoking, intoxication, offensive conduct towards other passengers, obstructing the servants of the company in the discharge of their duty, and damaging or defacing the company's carriages. Local regulations.

There is no reason to believe that the practical operation of these regulations is, generally speaking, oppressive, but many of them are objectionable in point of form, and there is an almost total want of uniformity among those of different railway companies. With regard to the first class of regulations, which are of a local nature, it would be obviously impossible to enforce any great degree of uniformity or legal accuracy; and I would submit to your Lordship that, unless in cases of manifest illegality or insufficiency as regards the public safety, it will be sufficient to interfere when complaints are made by parties interested. Regulations affecting passengers.

The other class of regulations, however, which affect the public generally, appear to call for the exercise of the powers vested in this department in order to introduce, as far as possible, a correct and uniform system. Hitherto no attempt has been made at a general revision of the regulations submitted to the Board of Trade, for several reasons, among which may be mentioned, Regulations of a local nature.

1. The necessity of acting with great caution where interests of such magnitude are involved. Regulations of a public nature.

2. The more pressing importance of attending to questions connected with the public safety occupying the whole time of the Railway Department. And, No general revision yet attempted.

3. The difficulty that presented itself in the way of carrying into effect the recommendation of the committee as to establishing an uniform system, owing to more than half the railway companies in the kingdom having made no returns.

The action of the Board of Trade has been, therefore, confined to a revision and provisional confirmation of such new regulations as were from time to time submitted, with a request that they might be immediately considered, in order to avoid the delay of two months, which would otherwise elapse before they acquired validity.

Several sets of regulations have been thus confirmed, with such modifications as appeared indispensable, but with no attempt to introduce any great degree of accuracy, until prepared to revise the regulations of all railway companies upon an uniform system.

With a view to a more general revision, I now proceed to offer the following suggestions for your Lordship's consideration:— Suggestions with a view to a general revision.

The principal objects of the regulations affecting passengers are,

1st. To enforce the ticket system, and to protect the company from fraud.

2d. To enforce such discipline as is required for the comfort of the travellers, and the protection of the company's servants in the discharge of their duty.

The extent and nature of the passenger traffic upon railways make it indispensable, in order to check fraud on the part both of the public and of their own servants, for companies to adopt the ticket system, which requires fares in all instances to be prepaid, and tickets given to the passengers, which are considered Ticket system.

as the sole vouchers for the payment of the fare, and are collected from the passengers before they leave the trains or stations.

The only objection to this system is, that tickets are frequently lost on the journey, and thus passengers, who have *bonâ fide* paid their fare, are liable to be confounded with persons fraudulently attempting to evade payment. Some companies, the Grand Junction for instance, in order to spare the public this inconvenience, collect the tickets before the train starts, although by so doing they incur a certain risk of being defrauded by persons travelling beyond the destination for which they have paid their fare. By far the most usual practice, however, is to collect the tickets at the end of the journey, before the passengers leave the carriages.

It appears to me that it would be improper, considering the magnitude of the interests at stake, to interfere with existing arrangements for the sake of protecting a few persons, who, after all, have their own negligence to blame.

I think, therefore, that the principle should be admitted that railway companies may require passengers to take out tickets, and may require such tickets to be produced and given up on demand, or the fare to be paid. In no case, however, should the regulation be so worded as to confound the *mere inability to produce a ticket with fraud, and to make it the subject of a penalty*. The Board of Trade should also require, as a condition of allowing the regulation which requires payment of fare on non-production of ticket, that proper instructions should be issued to the servants of the company, giving a discretionary power to some officer at each station to remit the payment of the fare, when satisfied that the ticket has really been lost, and making it imperative to investigate promptly every case where the ticket is said to have been lost; and if the assertion proves to be true, to return the extra fare. The instructions should also state that the power of summary apprehension is to be exercised with great caution.

If the principles above stated meet your Lordship's approval, I would suggest the following as standard regulations :—

Proposed Standard Regulations.

I. Tickets.

I. No passenger will be allowed to take his seat in or upon any of the Company's carriages, or to travel therein upon the said railway, without having first booked his place and paid his fare.

Each passenger booking his place will be furnished with a ticket, which he is to show when required by the guard in charge of the train, and to deliver up before leaving the Company's premises, upon demand, to the guard, or other servant of the Company duly authorized to collect tickets.

Each passenger not producing or delivering up his ticket as aforesaid, will be required to pay the fare from the place whence the train originally started.

II. Fraud.

II. Every person *attempting to defraud* the Company, by riding in or upon any of the Company's carriages without having previously paid his fare, or by riding in or upon a carriage of a higher class than that for which he has booked his place, or by continuing his journey in or upon any of the Company's carriages beyond the destination for which he has paid his fare, or by attempting in any other manner whatever to evade the payment of his fare, *is hereby subjected to a penalty not exceeding forty shillings.*

Prevention of smoking, &c.

As regards the prevention of smoking and other nuisances, and the maintenance of proper discipline, the chief points to be attended to are, that the regulations should be uniform, and not inconsistent with the provisions of Acts of Parliament.

Defects of existing regulations.

Those at present in force are frequently defective in one or more of the following respects :—

1. Mixing up cases of misconduct *by which danger is occasioned*, with cases which occasion only annoyance or inconvenience, the former being already provided for by Lord Seymour's Act.

2. Imposing absolute penalties, instead of penalties which may be mitigated at the discretion of the justice who tries the case.

3. Want of uniformity, the penalty in some cases attaching in the first instance, in others only upon persisting in the offence after warning to desist; in some cases being a fine, in others expulsion from the company's premises.

The following are suggested as standard regulations :—

I. Smoking.

1. Smoking is strictly prohibited both in and upon the carriage and in the Company's stations. Every person smoking in a carriage is hereby subjected to a penalty not exceeding 40s., and every person persisting in smoking in a carriage or station, after being warned to desist, shall, in addition to incurring a penalty not exceeding 40s., be immediately, or if travelling at the first opportunity, removed from the Company's premises and forfeit his fare.

2. Any person found on the Company's carriages or stations in a state of intoxication, or committing any nuisance, or otherwise wilfully interfering with the comfort of other passengers; and any person obstructing any of the Company's officers in the discharge of their duty, is hereby subjected to a penalty not exceeding 40s., and shall immediately, or if traveling at the first opportunity, be removed from the Company's premises and forfeit his fare.

Note. Persons wilfully obstructing the Company's officers, *in cases where personal safety is concerned*, are liable, under the 3 and 4 Vict. c. 97, s. 16, to be apprehended and fined 5*l.*, with two months' imprisonment in default of payment.

3. Any person wilfully cutting the lining, removing, or defacing the number plates, breaking the windows, or otherwise damaging any of the Company's carriages, is hereby subjected to a penalty not exceeding 5*l.*, in addition to payment for the damage done.

Several Railway Companies have regulations limiting their liability in regard to passengers' luggage, the purport of such regulations generally being, *that the charge made for passengers does not extend to luggage, and that the Company will not be answerable for luggage unless booked and paid for.*

Passengers'
Luggage, &c.

Such a regulation may be reasonable when the practice of booking luggage is really carried out, and proper facilities are afforded to the public for complying with it. Railway Companies, like coach proprietors or other carriers, may refuse to take charge of luggage unless booked, or otherwise given over to their servants in conformity with the general rules which they have found it necessary to lay down for conducting their business. But the case is different when, as frequently happens, the regulation respecting booking is a dead letter, and the general practice is to take charge of passengers' luggage without requiring it to be booked. In this case the regulation in question is nothing but a notice, the legal effect of which is very doubtful, and which, if the Directors think it advisable to issue, they ought to issue *as a notice*, and not in the form of a regulation requiring the approval of the Board of Trade.

The Carriers' Act distinctly provides, that no general notice shall limit the liability of common carriers with regard to objects other than those enumerated in the Act, and the proper rule appears to be, that although Railway Companies may refuse to take charge of passengers' luggage unless such reasonable regulations as they find it necessary to lay down are complied with, yet that if they do actually take charge of such luggage, they incur the ordinary common law liability of carriers, subject only to the limitations of the Carriers' Act.

The same principles apply to regulations limiting the Company's liability as regards carriages and horses. This is sometimes done by refusing to carry carriages or horses, unless the owner will sign a special agreement exempting the Company from all liability.

This is clearly illegal as regards the general liability, Railway Companies being bound like other carriers by the common law to undertake the carriage of all articles offered to them unless there is some reasonable ground for refusal, and it is only allowable to the extent of guarding against any extraordinary risk arising from the nature or value of the object unless a proper insurance is paid. In the case of carriages, it is generally admitted that there is no ground for charging any insurance; but in the case of horses, it appears fair that the Company should not be responsible for accidents arising from the viciousness or restiveness of the animal; and that they should not be responsible for more than a fair average value, unless the horse has been entered as of extraordinary value and a reasonable insurance paid.

Should your Lordship approve of the principles above stated, they may be applied generally in all cases where bye-laws or regulations are referred to the Board of Trade for approval, and opportunities may be taken of suggesting the standard regulations for consideration with a view to the gradual introduction of an uniform code.

I have, &c.,
S. LAING.

The views stated in this Report having met with your Lordship's approval, have been acted on with regard to the revision of bye-laws and regulations, and the proposed standard regulations have been adopted by several Companies. On the whole, 17 sets of new regulations have been submitted to the Board of Trade for revision since the passing of Lord Seymour's Act, viz. :—

1840.

September 15th.	Arbroath and Forfar.
September 23rd.	Birmingham and Gloucester.
October 10th.	Hartlepool.
December 7th.	Ardrossan.

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1841.	
January 23rd.	Garnkirk and Glasgow.
February 1st.	Birmingham and Derby.
March 9th.	Hull and Selby.
April 3rd.	Newcastle and Carlisle.
June 17th.	Northern and Eastern.
July 16th.	London and Brighton.
October 30th.	North Union.
November 12th.	Sheffield and Manchester.
December 11th.	North Midland.
December 8th.	Hartlepool.
December 10th.	Edinburgh and Glasgow.
December 23rd.	Birmingham and Gloucester.
December 24th.	Brandling Junction.

The details relating to the revision of the first five of these sets of regulations are published in the Parliamentary Return of last Session; those relating to the remaining 12 are given in the Appendix, No. VIII. p. 244.

It will be seen that the suggestions made by the Board of Trade have been uniformly attended to, and that the proposed standard regulations have been already adopted by the following Companies :—

North Midland.
Edinburgh and Glasgow.
Birmingham and Gloucester.
Brandling Junction.

Similar suggestions will be offered to other Railway Companies as opportunities arise, and there is every reason to believe that in a short time an uniform code upon all matters of regulation affecting the public at large will be generally adopted.

In two instances, representations have been made to this Department, to the effect that railway companies were in the habit of enforcing an illegal regulation requiring parties who sent carriages or horses by the railway to sign a special agreement, exempting the Company from all liability for loss however occasioned. Letters were written to the Companies, pointing out the illegality of such a course, except so far as might be necessary to protect themselves against extraordinary risk arising from the nature or value of the object, and the result was, that the regulation as regards carriages was entirely withdrawn, and as regards horses, modified in conformity with the principles above stated.

Enforcement of the Provisions of Railway Acts.

The Board of Trade has been called upon in several cases to exert the powers vested in it by Lord Seymour's Act, in order to prevent alleged deviations on the part of Railway Companies from the provisions of their Acts and of the general law, but hitherto it has not been found necessary to institute any prosecution for that purpose.

The enforcement of the provisions of the Act 2 and 3 Vict. c. 45, relative to erecting gates and stationing gatekeepers at level crossings has been, as is already stated, generally complied with, and also of the provisions of different local Acts relative to fencing, and other measures for the protection of the public safety.

The proceedings of the Railway Department in the case of Messrs. Pickford and Co., against the Grand Junction Railway Company, are fully stated in the Evidence before the Select Committee of the House of Commons of last Session.

It only remains to add that the Board of Trade having been satisfied that one of the most material points, in respect of which their interference had been requested by Messrs. Pickford and Co., was the subject of litigation in an action then pending in a court of law, letters were written to the parties stating that under these circumstances no further steps would be taken at least for the present, since which period no application has been made to this department on the subject.

See Mr. Johnstone's
Letter, Appendix,
p. 291.

In April last an application was made to this department by Mr. G. W. Johnstone, of Glasgow, to interfere for the purpose of preventing the Glasgow and Greenock Railway Company from indirectly becoming steam-boat proprietors, for the purpose of forwarding passengers by the railway to Rothsay, Dunoon, and other places beyond Greenock, and acquiring a monopoly of the whole passenger traffic on the Clyde.

After a full consideration of the circumstances, it was determined that this was not a case on which the Board of Trade could interfere, on the following grounds, which may be stated as illustrative of the principles upon which their Lordships have acted in the exercise of the power of instituting prosecutions against railway companies, vested in them by Lord Seymour's Act, in cases where personal safety is not concerned.

1. That this power, being of an extraordinary nature, is only to be exercised in cases where it is quite clear, 1st, that the conduct of the railway company is illegal ; 2nd, that it is contrary to public policy, and injurious to public interests.

2. That in the present case neither of these points was sufficiently established ; for although it is clearly illegal for a company, incorporated for a specific purpose, such as making a railway, to undertake a different and distinct branch of business, yet in the present instance it might be fairly a question whether the employing steam-boats to forward passengers from the terminus of the railway was not incidental to the main business and a public convenience ; and, at any rate, it did not appear that, whatever might be the ultimate object of the railway company, any loss was in the mean time sustained by the public, but rather that a certain class of passengers were conveyed part of the distance at lower fares than had been charged before the opening of the railway.

The next application was from Mr. Grey, of Norton, near Stockton-on-Tees, complaining of the conduct of the Clarence Railway Company, in having illegally laid down a new branch across a public road under circumstances involving great danger. The Inspector-General was instructed to visit the line, and from his report, which with Mr. Grey's memorial and other documents relative to the affair, are given in Appendix, p. 286, it appeared that the branch line, of which Mr. Grey complained, was absolutely necessary, in order to conduct the traffic upon the railway in safety, and that with certain precautions and alterations pointed out in the report, there was no reason to apprehend that the public safety would be endangered. Under these circumstances it was considered that although the right of the railway company to cross the highway might be doubtful, yet as the measure was on the whole conducive to the public safety, the Board of Trade should not interfere, on condition of receiving an assurance from the railway companies that the various precautions specified in the Inspector-General's report should be complied with. This assurance was given, and proper steps will be taken, to ascertain that it is duly fulfilled.

One case has occurred in which the Board of Trade has been called upon to exercise the jurisdiction vested in it by the 19th section of the Act for Regulating Railways, of determining disputes relative to the opening of branch communications with railways. It arose in consequence of a dispute between the Great North of England Railway and the proprietors of a warehouse and brick-yard adjacent to the line, who had enjoyed a right of communication by means of a short branch line with the main railway, which the extension of traffic consequent on opening the line from York to Darlington had rendered highly dangerous.

It will be seen from the report and correspondence relative to the case, Appendix, p. 283, that an amicable arrangement was effected through the intervention of this Department, by which the danger to the public was entirely obviated, and the rights of the parties preserved. Such an arrangement, however, might not be practicable in all cases, and in the event of the right, generally secured to the proprietors of lands adjoining a railway, of laying down branch communications with the main line of rails, being frequently acted upon, the powers at present vested in the Board of Trade might prove insufficient.

In concluding this review of the proceedings of the Railway Department during the past year, we think it right to advert to the points upon which further legislation appears desirable. Further legislation.

The recommendation of the Committee of the House of Commons of last session, that the supervision of the Board of Trade should for the present be exercised in the way of *suggestion* rather than that of *positive regulation*, will probably be considered conclusive, more especially as the experience of the past year has shown a progressive diminution in the number of railway accidents, and a general disposition on the part of railway companies to acquiesce in the suggestions offered by the Board of Trade.

Under existing circumstances, therefore, it seems better that the Government should not at present ask for the power of enforcing regulations for the prevention

of accidents, and that such a power should not be resorted to hereafter unless experience should clearly show the existence of general and culpable negligence and mismanagement under the present system.

The same consideration may, perhaps, render it advisable to postpone for the present any attempt to introduce a system of examining and licensing the engine-drivers employed on railways. We have already stated that a remarkable diminution has taken place in the number of accidents which may be attributed to the misconduct or unskilfulness of engine-drivers, and we may add that in the few instances which have occurred there has been no backwardness on the part of the railway companies to prosecute the offenders under the provisions of Lord Seymour's Act. Under these circumstances it may, perhaps, be more prudent to wait for further experience before attempting to introduce any change in the system at present in operation, which would appear to be on the whole not ill adapted for procuring a supply of efficient engine-drivers.

With regard to the opening of new lines, however, the case is different, as here the immediate interest of the Company always furnishes an inducement to open at the earliest possible moment; and experience has shown that a large proportion of the railway accidents which have occurred have been upon lines recently opened.

We have already stated that the powers at present vested in the Board of Trade are inadequate for the purpose of insuring an efficient inspection before a line is permitted to open; and we should recommend that the clauses of the Bill of last session, requiring a more definite notice of the completion of the line, and giving to the Board of Trade a positive power of postponing the opening in the event of an unfavourable report from the inspector, should be again brought forward.

The necessity of some further power of obtaining from railway companies returns of accidents, and information bearing upon the question of safety, is also obvious, the only power at present enjoyed being that of ordering returns of accidents attended with personal injury, to be made within thirty days.

It is evident that, in order to exercise an effective supervision, the Railway Department should have access to any description of information bearing upon the question of public safety. Accidents frequently occur where imminent danger is sustained by the passengers, and under circumstances calculated to throw much light on the sources of danger in railway travelling, of which no return is made to the Board of Trade, because it happens that no personal injury has been sustained. It is important that the Railway Department should be enabled to keep a record of all accidents, such as engines running off the line, axles breaking, &c., which tend to throw light on the respective advantages of different methods of construction, and also of interruptions and irregularities in the traffic, which are a source both of danger and inconvenience to the public.

With this view we should recommend the renewal of the clauses in the Bill of last session, which extend the powers of the Board of Trade, of requiring information bearing upon the question of the public safety.

The Committee of last session recommended that provision should be made for obliging the Directors of connecting lines of railways to come to an agreement upon the arrangements necessary for conducting the joint traffic with safety and convenience to the public, and to refer disputes between them to arbitration. This principle might properly be extended to several other cases in which rights have been secured to various parties by Railway Acts, which cannot be exercised without danger to the public. These rights are principally of three classes:—

1. The right of crossing roads by railways on a level.
2. The right of laying down branch communications opening into the main line of a railway.
3. The right secured to parties, other than the Railway Company, of entering upon the railway with locomotive engines.

With regard to level crossings, the cases of the Glasgow and Ayr, Dundee and Arbroath, and Croydon Railways, have been already mentioned, in which level crossings, which it would be extremely desirable for the public safety to avoid, have been continued from the want of any controlling power to compel the different parties interested to come to an agreement.

It is also obvious that the rights which have been universally guaranteed to the owners of lands adjoining to railways, and to the public, with their permission of laying down branch communications with the main line, and entering upon it with carriages and locomotive engines of their own, could seldom be exercised without

extreme danger to the public using the railway. One case has been already mentioned, that of the Great North of England Railway and Messrs. Gill and Brown, in which the former right was insisted on, under circumstances which, but for the amicable arrangement effected by the intervention of the Board of Trade, would have been attended with considerable danger. It might not be possible to effect such an arrangement in all cases, and it would appear desirable that some more effectual provision should be made to insure the public safety. With this view we should recommend that in all cases where rights have been given with respect to level crossings, branch communications or locomotive engines, which cannot be exercised without decided danger to the public, the Board of Trade should have a power analogous to that recommended by the Committee in the case of connecting railways, of calling upon the parties interested to come to an agreement for obviating the danger, and to refer any disputes between them to arbitration.

It would also be desirable to set at rest all doubts relative to the proper manner of shutting gates at level crossings, by a specific enactment, that such gates should be kept shut in the manner which experience has shown to be most conclusive to safety, viz. across the road, and not across the Railway, excepting in special cases where the Board of Trade may find it necessary for the public safety to make a different arrangement.

It has been represented by several railway companies, that the clauses usually inserted in Railway Acts, imposing a penalty on persons omitting to *shut and fasten* private gates opening on the railway, are insufficient; and as we have reason to believe that this statement is correct, and as it is very important for the public safety to prevent cattle and horses from straying upon the railway, we should recommend a clause obliging the occupiers of lands adjoining the railway to keep gates opening upon it *locked*. This clause might be properly accompanied by one making it imperative on railway companies to keep their lines properly fenced, instead of merely obliging them to erect such fences as the owners of adjoining lands may require, as is generally the case under existing Railway Acts.

The occurrence of so many slips during the present winter upon lines which had been constructed for a considerable period, has shown that it would be desirable in several cases to give a greater width to embankments, and inclination to cuttings. A considerable obstacle is, however, presented to the adoption of these precautionary measures by the want of power to take the land requisite for the purpose. We would recommend, that in cases in which the Board of Trade shall certify that certain small portions of land adjoining a railway are required for the above purpose, the compulsory powers of taking land contained in the original Act, should, as regards such portions of land, be revived. We should also recommend that, with a view to the speedy repair of slips and failures in the works of railways, railway companies should be allowed to enter upon and pass over adjoining lands for the purpose of repairing accidents, upon paying proper compensation to the owners of such lands for any damage done.

We have the honour to be,

&c.

&c.

G. R. PORTER.
FREDERIC SMITH.
S. LAING.

APPENDIX.

I.—RETURN OF ACCIDENTS.

ST. HELEN'S AND RUNCORN GAP RAILWAY.

Appendix.

I.
Returns of
Accidents.

St. Helen's and
Runcorn Gap.

SIR,

St. Helen's and Runcorn-Gap Railway Company,
St. Helen's, February 5th, 1841.

Referring to the annexed accident, I beg to refer you to the substance of the evidence given before the coroner.

I have, &c.,

G. R. Porter, Esq.
&c. &c. &c.

F. W. JAMES, jun.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.
1841. Feb. 3.	John Abbott.	Farmer of Sutton.	Compound fracture of leg and thigh.	Run over by a train of waggons.	His farm being intersected by the Railway, he was driving his cows across the road to water, when one ran along the line towards the coming waggons, he ran and endeavoured to drive her off and was run over.

F. W. JAMES, Jun., Agent.

At an Inquest held at the Royal Oak, Sutton, in the parish of Prescott, this 5th February, 1841, before John Heyes, Esq. coroner, upon the body of John Abbott.

William Edwards, labourer of Sankey Brook Colliery deposed, that he, in company with James Jackson, (in the same employ,) had been to the dock, and had arrived at the top of Sutton incline with a train of empty coal waggons, and two laden with copper ore, when the breaksman, Samuel Dannett, stopped the train till he had examined and applied the breaks, when the signal having been given that all was clear, all three began to descend the incline; when within 150 yards of the road where Abbott's farm is intersected, he saw Abbott running from the field after a cow which he was taking to water, but had taken up the incline; instead of across the road; when the first waggon was within forty yards of the cow, he, the deceased, endeavoured to push her across the road, but whether he slipped in the snow or was knocked down by the waggon, I do not know; Dannett immediately exclaimed, "There is a man killed," and as soon as he was able stopped the train, when we returned in company and found the deceased lying between the western line of rails, he died before we could convey him home.

James Jackson corroborated the foregoing statement.

Samuel Dannett deposed that he had been employed as breaksman by the St. Helen's and Runcorn Gap Railway Company near three years, and that when the train arrived at the top of the incline he had examined the breaks, and finding three waggons with breaks that he considered inefficient, he applied "scotches" to prevent the wheels of those waggons from revolving, and that the speed of the train was not more than two miles per hour when he first saw the deceased, but, that from the short distance there was between the deceased and the first waggon, he could not have stopped the train in time to prevent the accident if he had been so inclined; the deceased being in the habit of crossing several times a day he was under no apprehension except for the cow; he further corroborated the evidence given by W. Edwards, and Jackson.

Hannah Gerrard deposed to the deceased leaving the house for the purpose of watering the cows, and to his being brought in dead in less than a quarter of an hour.

Further evidence was tendered, but the jury were unanimously of opinion it was uncalled for, and a verdict of accidental death recorded, with a deodand of five shillings upon the waggons.

B

Appendix.

I.
Returns of
Accidents.
Clarence.

CLARENCE RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Cause of Accident.
1841. Feb. 6.	Thomas Goundrey.	Coal Teamer.	Broken Leg.	Jumping off the coach without the engine being stopped.

Clarence Railway Office, Stockton,
February 9, 1841.

GEORGE CHILD, Superintendent.

London and
South Western.

LONDON AND SOUTH WESTERN RAILWAY.

SIR,

Nine Elms Station, February 13th, 1841.

I AM sorry to have to state that a collision took place on Sunday evening last on our railway, at Kingston, between the train leaving Woking at six o'clock and some empty waggons. It was unattended with personal injury, so far as we are informed, and it therefore appeared to me not to be a case calling for a return to the Lords of the Committee of Privy Council for Trade. As, however, it is evident that a greater scope of information is sought for hereafter than is at present demanded, and as we wished to err, if at all, on the right side, I did myself the honour of calling on Sir Frederick Smith, to communicate with, and consult him on the subject; Mr. Laing was also present; and these gentlemen confirmed the opinion which I already entertained, that no report was required. They, however, expressed an opinion that you would like to be informed of the occurrence, and of the mode in which those whose culpable negligence occasioned the accident were dealt with by the directors: I beg therefore to state, that at their meeting yesterday the station clerk, one of the policemen, and the porter, were each discharged, and that the Company's solicitor received instructions to cause them to be summoned before the magistrates, in order to institute a prosecution.

I have, &c.

G. R. Porter, Esq.
&c. &c. &c.A. MARTIN,
Resident Engineer and Superintendent.

GRAND JUNCTION RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. 11th Feb. At 4h. 40m. A.M.	James Neister.	A man in charge of pigs.	Internal.	Thrown out of a waggon that was broken.	A train with pigs ran against a goods train that was standing on the line at the Whitmore First Class Station.	From the state of the rails, which were coated with ice, the engineman of the second, or following train, did not stop in sufficient time to prevent the collision. He had shut off his steam earlier than usual, and, as he thought, soon enough for stopping at the station to take in water

and coke as usual, the breaks being at the same time applied. A Coroner's Inquest was held on the 12th (yesterday), which I attended; and every man in any way connected with either train, or with the station, was produced, as also the Superintendent of the Locomotive Department, to show the condition of the engines, &c., and several other persons unconnected with the Company. After an inquiry of nearly six hours, the Jury returned a verdict of "Accidental Death, with a deodand of one shilling on the engine." Both Coroner and Jury expressed themselves perfectly satisfied that the accident was "purely accidental." I may add that the state of the rails on the night and morning in question was (from ice) really altogether unprecedented; in proof of which I may also state that the Mail Train hence at 7 P.M. on the 10th was three hours in traversing the first twenty miles, and did not arrive in Birmingham till 5 o'clock in the morning, being 5½ hours after time.

E. J. CLEATHER, Superintendent and Secretary.

Great Western.

GREAT WESTERN RAILWAY.

(Extract.)

SIR,

Princes Street, Bank, 15th February, 1841.

My absence during last week prevented my sending in a return to you of the breakage of a wheel on a second class carriage in one of the trains. A piece of the iron struck one of the passengers, but the injury was not serious. His name is William Sweetman, and he proceeded on his journey by a subsequent train on the same day—the 9th instant.

The carriage, being on six wheels, was not thrown off the rails; and the train, after a short detention, proceeded to its destination.

I have, &c.

G. R. Porter, Esq.,
&c. &c. &c.

CHARLES A. SAUNDERS, Secretary.

ARBROATH AND FORFAR RAILWAY.

Arbroath and Forfar Railway Office, Arbroath.
Monday, 15th February, 1841.

SIR,

I BEG to enclose a return of an accident which occurred upon this line on Friday last. The cause that led to the accident, and where the blame rests, are now under strict investigation by the judicial authorities, as well as by the directors; and I have not, therefore, been able to make the return complete on that head.

I am happy to say, that, from the Medical Report received to-day, the two engine drivers, who were the persons most hurt, are considered to be going on favourably.

I am, &c.

G. R. Porter, Esq.
&c. &c. &c.

JOHN MACDONALD, Secretary.

Appendix.

I.
Returns of
Accidents.

Arbroath and
Forfar.

RETURN of Accident occurring in the course of the Public Traffic.

Date.	Names of Persons Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.
1841. Feb. 12.	William Barrie.	Engine-driver,—servant of the Company.	Scalded, and sustained a severe stroke on the back.	A collision between the up passenger-train, which left Arbroath at half-past eight o'clock, A.M., and a ballast-train coming downwards. The collision took place after passing Clocksbriggs Station, and near to Forfar.	The cause of the accident is still under strict investigation by the Directors, and also by the Sheriff of the County of Forfar.
	John Adamson.	Engine-driver,—servant of the Company.	One of his legs broken in two places, and both his hands severely burnt.		
	George Porter.	Trainman,—servant of the Company.	Very slightly cut about the head.		
	Robert M'Guire.	Labourer,—servant of Jas. Robertson, road contractor.	Collar-bone broken.		
	D. Campbell.	Passenger,—Governor of Dundee Prison.	Slight fracture of the knee-pan of his left leg, and a slight cut on the forehead.		

Remark.—Sunday intervening interrupted the inquiry.

Arbroath and Forfar Railway Office,
Arbroath, 15th February, 1841.

JOHN MACDONALD, Secretary.

GLASGOW AND AYR RAILWAY.

Glasgow and Ayr.

REPORT of an Accident on the 22nd of February.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Cause of Accident.	Remarks.
1841. Feb. 22.	Robert Baxter.	Second Guard of Luggage Train.	Severely bruised.	Having improperly gone between the buffers of two trucks when backing, the train was standing at the time.	Likely to recover.

J. H. HUMFREY, Secretary.

BRANDLING JUNCTION RAILWAY.

RETURN of an Accident, attended with loss of life, on the 25th of February, 1841.

Date.	Name of Person injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Feb. 25.	William Taylor.	Passenger.	Fracture of the skull, from which immediate death ensued.	A fall from the step of one of the carriages.	The sufferer having imprudently left the carriage in which he had been seated, and having attempted to pass from one carriage to another.	Nothing occurred to the train, which was proceeding at its usual rate of about 20 miles an hour. A Coroner's Inquest has this day been held upon the body, and a verdict of accidental death returned, with a deodand of 5s. upon the engine and carriages.

The evidence given on the Coroner's Inquest went to show that the deceased had been much affected on hearing of the death of his father and that a great change in his demeanour had been observed for the last three or four days.

ROBERT W. BRANDLING, Managing Director.

Appendix.

I.

Returns of
Accidents.

Great Western.

GREAT WESTERN RAILWAY.

SIR,

Princes Street, Bank, 27th February, 1841.

I regret to inform you that a man (whose name is unknown), apparently about sixty years of age, having with him a basket of apples and nuts, from which it is inferred that he was engaged in selling fruit, suddenly crossed the line of railway, when the engine with the 4. 30. up-train was passing last evening, and was knocked down, having been struck on the temple by the off buffer of the engine. I have reason to believe that the engine driver used every exertion which was in his power to prevent this accident, as soon as he saw the man to be crossing the line; but the whole transaction was so instantaneous, that he could not even check the speed of the engine in time.

The train was, of course, stopped, and the unfortunate man brought to Reading. The only mark being on his temple, the surgeon who examined him, reports that instantaneous death must have taken place from the nature and violence of that blow.

I have, &c.,

G. R. Porter, Esq.,
&c. &c. &c.

CHARLES A. SAUNDERS, Secretary.

St. Helen's and
Runcorn Gap.

ST. HELEN'S AND RUNCORN GAP RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Feb. 24.	John Deakan.	Boy 9 years of age. Resident at Widnes Dock, in the parish of Prescot.	Compound fracture of the left thigh and arm, and severe injury in the abdomen.	Run over by coal waggons.	Attempting to run between the horse and the waggons.	This boy is the son of a Flatman, whose vessel loads in Widnes Dock, and was returning from school, and attempted to run between the waggons and the horse, although cautioned by the driver to keep away.

F. W. JAMES, Jun., Secretary.

Great Western.

GREAT WESTERN RAILWAY.

SIR,

Princes Street, Bank, 3rd March, 1841.

I have to acquaint you, in compliance with the orders of the Lords of the Committee appointed for Trade, that a policeman on the line, named George Thatcham, was found on the morning of the 1st instant, to have been run over and killed, by one of the night trains in Basildon Wood cutting, where he was placed to watch the railway.

It does not appear that the engine-driver, or any person with either of the night trains was aware of the circumstance, and it is entirely left to conjecture the cause of accident, or the mode in which it occurred.

A Coroner's Inquest sat upon the body, and returned a verdict of accidental death, with the declaration that no blame was imputable to the Company.

I have, &c.,

G. R. Porter, Esq.,
&c. &c. &c.

CHARLES A. SAUNDERS, Secretary.

MANCHESTER AND LEEDS RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Appendix.

I.
Returns of
Accidents.Manchester and
Leeds.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.
1841 Mar. 2nd	John Brazin	Passenger and a prisoner, being on his way to Wakefield.	Broken leg and otherwise injured.	By leaping out of the carriage intending to escape from the constable.	See previous answer.

WILLIAM ROBINSON.

GLASGOW AND AYR RAILWAY.

Glasgow and Ayr.

RETURN of an Accident, attended with loss of life, on the 3rd of March.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Remarks.
1841 March 3.	John Davies.	In the employment of a contractor.	Killed on the spot.	Lost his hold in attempting to unlock six waggons, and the whole six went over him.	This man was going with a coal train at night, and lost his life by want of caution alone.

J. H. HUMFREY, Secretary.

SLAMANNAN RAILWAY.

Slamannan:

RETURN of Accident occurring in the course of the completion of the Work.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Remarks.
1841 March 1.	Patrick Mc.Analty	Employed by one of the contractors, in completing a portion of the railway, as a Breaksman.	Injured by being crushed between two waggons, and died in consequence.	There is a portion of the railway still unfinished from which place the excavated earth is conveyed down an inclined plane, of 1 in 100, by gravity, and the deceased was employed to check the speed, as occasion required, by means of the breaks. In this instance he was standing behind the first waggon in the train, from the top of which a stone, or lump of earth, fell upon the rail, throwing the waggon off the way and causing it to stop suddenly, and the others behind coming close up, jammed the deceased in such a manner as caused death in a short time thereafter.

March 4, 1841.

BALLOCHNEY RAILWAY.

RETURN of Accident.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. March 3.	James Crawford	The man was a waggoner employed in driving ballast along the Ballochney Railway for the Slamannan Railway Company.	Instant death.	Two loaded waggons went over his body.	He was standing upon the waggons driving his horse, when it is supposed he had either taken some sort of fit, or had slipped or fallen from his post before the waggons.	James Crawford's brother, who is owner of the horse, and whose servant the man was, was upon the waggons at the time of the accident; but could not account for the cause of the accident.

WILLIAM DAVIES.

Appendix.

I.
Returns of
Accidents.

Eastern Counties.

EASTERN COUNTIES RAILWAY.

RETURN of Accident on the Works.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Feb. 6.	Samuel Long.	Contractor's labourer.	Cut and bruise on the hand.	Slipping of the tackle of scaffolding, used in the erection of a temporary bridge near Hutton.	The timber falling upon his right hand.	The accident on its happening was considered so trivial by the contractor, that no report was made of it to any of the Company's officers, it subsequently became necessary to amputate the little finger, and the man has since died in the London Hospital, where he was taken. The first intimation the officers received of the accident was on the 15th instant. The result of the Coroner's Inquest will be reported as soon as known.

Eastern Counties Railway Office, High Street, Shoreditch,
16th March, 1841.

ANTH. BULKELEY, Secretary.

Northern and
Eastern.

NORTHERN AND EASTERN RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. March 9.	John Webb.	Plate-layer.	Toes injured and ribs fractured.	Standing on the railway, and driven off by the buffer of the engine. The engine-man whistled; but the man was deaf. This was unknown to the contractor.	Inattention to the whistle of the engine-man.	The man taken to London Hospital, and appears to be gradually recovering.

WM. BOURNE, Secretary.

Newcastle and
North Shields.

NEWCASTLE AND NORTH SHIELDS RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Mar. 13.	William Liddell.	Passenger.	Fracture of leg and dislocation of shoulder.	Leaping from the carriage before being brought up at the station at Howden.	Intoxication of the injured party.	This is the first accident which has happened to any passenger since the railway was opened. There seems no blame attributed to any servant of the Company. The party appears to have escaped the observation of the clerk at the station, in passing to the train, although much intoxicated, and persisted in leaping out before it stopped; the other passengers sitting near attempted to prevent him, but could not.

March 1, 1841.

WILLIAM SORAN, Clerk to the Company.

STOCKTON AND DARLINGTON RAILWAY.

RETURN of an Accident, March 16, 1841

Name.	Injury, &c.	Particulars.
John Garbutt.	Hand injured, and afterwards amputated.	On March 16th, 1841, at 9 o'clock p.m., John Garbutt, of Mandale, near Stockton, was discovered laying in a state of extreme intoxication upon the line in Stockton Cut. Some waggons had passed over his right hand, which had to be amputated. Henry Gladders observed him laying between the rails; called for assistance, and conveyed him to his father's house. The young man can give no account of the circumstances. Henry Joicey, engineman, was coming up with his engine; saw a horse with a saddle on, which ran in front of the engine. Henry Joicey saw nothing of the owner. The horse is since proved to be the one upon which Garbutt had been riding. The Superintendent of Police reports the young man is doing well.

Signed, by order of the Committee of Management,

Darlington, March 19, 1841.

SAMUEL BARNARD, Secretary.

Appendix.

I.
Returns of
Accidents.Stockton and
Darlington.

BIRMINGHAM AND GLOUCESTER RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.
1841. March 9.	James Howell.	Labourer, servant of the company.	Violent bruise on the side.	The buffer of a locomotive engine struck the deceased on the side.	A hammer being left on the line, which the deceased endeavoured to remove before the train reached it.

The above James Howell was conveyed to the Worcester Infirmary immediately after the accident, where every surgical assistance was afforded him, but he died the same evening. A Coroner's Inquest was held the following morning, when a verdict of accidental death was returned, with a deodand of 5s. on the engine.

WILLIAM BURGESS, Secretary.

Birmingham and
Gloucester.

MONKLAND AND KIRKINTILLOCH RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Mar. 20.	John Wilson.	Dragsman to one of the engines belonging to the Monkland and Kirkintilloch Railway Company.	The right hand severely bruised, but no bones broken.	The hand jammed betwixt the waggons loaded with coal.	The loaded train of waggons attached to the engine, while being put back into a lay, to be attached to several other loaded waggons coming together, the said John Wilson having incautiously put his hand on one of the trams of the said waggon, while coupling them together.	Immediately after receiving the injury, the said John Wilson went to a surgeon and had his hand examined. the surgeon gave it as his opinion that there were no bones broken. The said John Wilson resides at Commonhead, parish of New Monkland.

GEORGE LISH, Superintendant,
Monkland and Kirkintilloch Railway.Monkland and
Kirkintilloch.

GRAND JUNCTION RAILWAY.

Grand Junction.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Mar. 23.	William Henry Box.	Servant of the Company; guard of passengers' trains.	Broken arm.	A fall from the roof of a coach.	Foot slipped whilst strap-the sheet upon the luggage.	The surgeon in attendance upon the sufferer reports that amputation will probably be necessary.

E. J. CLEATHER, Manager and Secretary.

LIVERPOOL AND MANCHESTER RAILWAY.

Appendix.

I.
Returns of
Accidents
—
Liverpool and
Manchester.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. March 20	J. Thelwell	Night Watchman.	Killed.	Run over by Grand Junction mail-train from Liverpool, about half-past 7, p.m., about 12 miles from Liverpool.	Nothing known beyond the fact of the man having been found lifeless by Henry Tarbuck, another watchman, almost immediately after the passing of the mail-train.	It seems probable Thelwell was coming to his post as night-watchman in that neighbourhood, and that he was not aware that a train was very near him. The circumstances of the accident have been investigated before a Coroner's Jury, whose verdict is "Accidental death."

Liverpool, 25th March, 1841.

H. BOOTH.

Maryport and
Carlisle.

MARYPORT AND CARLISLE RAILWAY.

SIR,

Maryport, 26th March, 1841.

ON Saturday the 20th instant a stonemason of the name of Joseph Smith, on the train passing the quarry where he had been working, got upon the last truck, whilst the train was proceeding at the rate of ten miles per hour. He was sitting with his legs over the side of the truck, and on the train slackening speed he fell therefrom, and fractured his arm so severely that it was found necessary to amputate it: he is now doing well. The cause of the accident is to be attributed entirely to the man's own imprudence.

G. R. Porter, Esq.
&c. &c. &c.

WILLIAM MITCHELL, Secretary.

Manchester and
Leeds.

MANCHESTER AND LEEDS RAILWAY.

Superintendent's Office, Lees Street, Oldham Road, Manchester.
27th March, 1841.

SIR,

I TRANSMIT to you, for the information of the Right Hon. the Lords of the Committee of Her Majesty's Privy Council appointed for Trade and Foreign Plantations, the accompanying particulars of a collision which happened at a quarter to five o'clock yesterday evening between a pilot-engine, which was returning to Manchester on the wrong line of rails, contrary to printed instructions, and a goods train, which departed from the Manchester station at about twenty-nine minutes past four o'clock p.m. The individual who lost his life in this melancholy affair was the person at fault, for presuming to conduct one of the Company's engines on the wrong line of rails, and in opposition to his printed instructions. The borough inquest, or rather the one held by the borough coroner, has taken place this evening, and the verdict of the jury is *that the deceased came to his death by accident*, and exculpating the Company and their servants from blame. The inquest to be held by the county coroner is adjourned to Wednesday next, in consequence of his being obliged to leave Manchester for London. I shall be able on Saturday next to furnish you with a report of both inquests. In communicating which

I am, &c.

G. R. Porter, Esq.
&c. &c. &c.

WILLIAM ROBINSON.

RETURN of Accident occurring in the course of public traffic.

Date.	Names of Persons Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Mar. 26.	Charles Innis.	Foreman in the locomotive department of this Company.	Arms, legs, and ribs broken, &c., of which he died in half an hour after the accident.	Collision between the Pilot engine (which Innis was driving), and a goods train.	Innis was acting contrary to printed instructions in returning on the same line of rails as he went up, which caused the accident.	The unfortunate deceased had been helping up the incline the four o'clock, p.m. passenger train, which ought to have been assisted as far as Mill's Hill, a distance of five and a half miles from Manchester, where there is a shunt, by which he ought to have gone upon the right line; but he left the train about four miles from Manchester, and in opposition to the stoker's ex-postulation, who reminded him
	John Leedham.	Stoker to the engine which Innis was driving.	Contused thumb and his side injured.	Ditto.	Ditto.	
	James Smith.	Driver of the engine of the goods train.	A severe bruise on the side of his temple.	Ditto.	Ditto.	

that it would be impossible to escape the four o'clock luggage train,* perished in proceeding. It was in a deep cutting, called Morton Cutting, and when within 200 or 300 yards of each other, that the drivers first saw their perilous condition, owing to that portion of the line being a sharp curve. The stoker of the goods-train, and also the guard, escaped without any injury.

* This train, though due at 4, does not depart before 20 minutes after that time.

NORTH UNION RAILWAY.

RETURN of Accident which occurred in the course of public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841 Mar. 25.	George Ather-ton.	A servant of the Company, under notice of dismissal at the time for having been intoxicated before, and who had on this occasion left his station without leave.	Scalp of the head taken off, and other severe bruises on the body.	Crushed under the wheels of the tender and carriage.	The man either fell off the tender, or attempted to leap off (not known which), while the engine was running between 15 and 20 miles an hour.	Instantaneous death.

The Minutes of the Coroner's Inquest will be forwarded.

North Union Railway Office, Preston,
March 29, 1841.

JAMES CHAPMAN, Secretary.

BALLOCHNEY RAILWAY.

Ballochney.

Reporting an Accident on the 25th March.

SIR,

Glasgow, 27th March, 1841.

I AM under the painful necessity of inclosing to you a return by the resident engineer on the Ballochney Railway of a fatal accident which happened the day before yesterday to one of the oldest and most valued servants of the Company. He was employed upon the incline planes, which you may be aware are what are called self-actors—that is, the descending loaded trains take up the empty waggons, to which they are attached by a rope round a pulley. In transmitting the report, Mr. Dodds says, “it is certainly consolatory to think that no blame has attached to any person; every thing was done to save him by the men on the train, as well as others who were on the train at the time. I think his mind must have been deeply engaged about his work, though not of a mental nature.”

I have, &c.

J. Laing, Esq.
&c. &c.

JAMES MITCHELL.

RETURN of Accident.

Date.	Name of Person Injured.	Description.	Nature of Accident.	Nature of Injury.	Cause of Accident.	Remarks.
1841 March 25	John Scott.	Railway Company's servant.	A train of loaded waggons went over his head and feet.	Instant death.	He was in the act of oiling the pulleys on incline planes, and not observing the waggons approaching was run down.	The accident took place at the passing place on the inclines, that is, where the one train passes the other. The men on each train called out and waved to the man, but it appears he took no notice of them. He probably seeing the empty waggons on the opposite line had forgot that the loaded ones were immediately behind him until the very moment when he was turning his head to look behind him he received the blow. He has been employed on these inclines between 10 and 12 years.

March 27, 1841.

WILLIAM DODD, Superintendent.

Appendix.

I.
Returns of
Accidents.Monkland and
Kirkintilloch.

MONKLAND AND KIRKINTILLOCH RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Mar. 30.	James Lepord.	Waggoner to the Coltness Iron Company.	One of his legs fractured above the ankle, and his other leg bruised.	A waggon loaded with pig iron passed over one of his legs, and the wheel of the said waggon came in contact with his other leg.	His feet slipped, whereby he fell, when in the act of loosing the tail chain of his horse from a race of waggons.	He, the said James Lepord, was immediately put into a waggon and conveyed to a surgeon, a distance of about a quarter of a mile; and after being examined by the said surgeon, he ordered him to be conveyed immediately to the Royal Infirmary, Glasgow, as one of his legs would require to be amputated. James Lepord resided at or near Coltness, parish of Cambusnethan.

Glasgow, Paisley,
and Greenock.

GLASGOW, PAISLEY, AND GREENOCK RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. 2d April.	John Barclay.	Guard.	Death.	Skull fractured by striking against a bridge in consequence of standing on the carriage.	Carelessness and inattention to repeated orders on the subject.	This guard was young and inexperienced, but was carefully drilled to his work. He was warned only a minute before his death that he was in a dangerous position.

MARK HUISH, Secretary,
Glasgow, Paisley, and Greenock Railway Company.Garnkirk and
Glasgow.

GARNKIRK AND GLASGOW RAILWAY.

SIR,

Glasgow, 23d April, 1841.

I BEG to report the following accident: I would put it in the usual formal shape, did I not suppose that it does not come under the requisition for such returns, the sufferer being a workman employed on the railway, though not by the railway Company, but by the occupier of an adjoining brick-work.

30th March, 1841, Edward Hutton, labourer, Heathfield, employed at the time as a waggoner on the railway, killed by leaping from the front of a waggon, and being run over by it. He and another man were pushing the waggon along the railway, and were overtaken, far from any siding, by an engine and mineral train, which shoved the waggon onwards, the men having mounted upon it. They jumped from the waggon on reaching the brick-work which they were going to, but while the waggon was still in motion before the train. The deceased seemed ignorant of the proper mode of quitting a waggon in motion. His companion was not injured.

In case any blame might attach to the engine-driver, I reported the matter to the fiscal or public prosecutor for Lanarkshire, Mr. George Salmond, of Glasgow, who has examined several witnesses, but the result has not transpired.

G. R. Porter, Esq.,
&c. &c. &c.

I have, &c.

CHARLES ALEX. KING, Secretary.

EASTERN COUNTIES RAILWAY.

RETURN of Accident on the Works.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. April 2.	Jonathan Boyce	Contractor's labourer.	Leg broken below the knee.	Struck by a fall of earth at Widford.	The earth unexpectedly giving way.	The surgeon reports that the man is doing very well, and that there is every prospect of his recovery in a month or six weeks.

Eastern Counties Railway Office, High-street, Shoreditch,
April 5, 1841.

ANT. BULKELEY, Secretary.

Appendix.
I.
Returns of
Accidents.
Eastern Counties.

MONKLAND AND KIRKINTILLOCH RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. April 4.	Geo. Buchanan	Labourer at Dundyvan iron works.	One of his arms severely fractured.	One of the waggon wheels came in contact with his arm.	In attempting to leap off from between the waggons, the brake caught his clothes, which caused him to fall.	One of the Monkland and Kirkintilloch Railway Company's locomotive engines, after delivering a loaded train of waggons at Dundyvan iron works, was returning from the works with a train of empty waggons, when the said George Buchanan, unknown to the engine driver, leaped on betwixt two of the waggons, and concealed himself from the engine driver for some time; and when in the act of leaping off, got entangled with one of the brakes, which caused him to fall, whereby he received the injury as before stated.

GEO. LISH, Superintendent.

WHITBY AND PICKERING RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description (stating whether Passenger or Servant of the Company.)	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. April 8.	William Herbert	Not either.	The body being nearly cut in two.	By three loaded carriages passing over the body.	Intoxication.	The deceased was unfortunately trespassing on the line when the accident occurred. The jury's verdict was Accidental Death, without any deodand.

Railway Office, Whitby.
April 12, 1841.

W. THOMPSON, Manager.

EASTERN COUNTIES RAILWAY.

RETURN of Accident occurring in the course of public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. April 11.	Joseph Poole	Passenger	Left leg fractured and lacerated below the knee, and the foot also lacerated; the right foot slightly lacerated.	Having alighted from the train, he was walking on the edge of the platform of the Devonshire-street station, supporting himself, being lame, on his stick, when the stick broke, and he fell off the platform, tumbling between it and the last carriage of the train, which, having proceeded on at the moment, passed over his leg.	The stick upon which he was leaning breaking, causing him to fall off the platform.	The accident is mainly attributable to the man being intoxicated at the time, and to his want of caution in walking unnecessarily close to the edge of the platform, for which there was no occasion, as the platform was not at all crowded at the time, there being only seven persons upon it. The man was intoxicated when brought to the London Hospital, and admitted having been drinking. He is doing as well as can be expected.

Eastern Counties Railway Office, High-street, Shoreditch,
April 13, 1841.

ANT. BULKELEY, Secretary.

Appendix.

I
Returns of
Accidents.

Birmingham and
Gloucester.

BIRMINGHAM AND GLOUCESTER RAILWAY.

RETURN of Accident.

Date.	Names of Persons Injured.	Description.	Nature of the Injury.	Nature of the Accident.	Cause of the Accident.	Remarks.
1841. April 7.	William Creuze . Rich. Walworth . Mrs. Walworth . Archibald Torry . Charles Shaw .	Engineer of locomotives. . Foreman of en- gine shops. Wife of above . Engineer . . Fireman . .	Extensive scalding. Slightly. Ditto. Ditto. Badly scalded.	A quantity of steam and boiling water rushing out of the boiler of a locomotive engine. on which the parties were standing.	A plug being forced out.	Immediately after the above-mention- ed accident had occurred, surgical assistance was ren- dered to the per- sons scalded, but from the severe nature of the in- juries received by Mr. Creuze, his death ensued on the morning of the 8th. An inquest was held on the 9th, when the following verdict was returned, "We find that the deceased William Creuze came to his death in consequence of a plug which had been used to stop one of the holes in the tube-plate of the fire-box of a locomotive engine called the 'Boston,' being blown out, by means of which he was severely scalded, and we are of opinion, that the plug was not placed in the plate in a secure manner." Deodand 25 <i>l.</i> on the engine. The circumstance of there being so many persons upon the engine, is accounted for by their having availed themselves of it to return to Bromsgrove after assisting a train up the inclined plane. A copy of the evidence taken by the Coroner will be forwarded as soon as possible.

W. BURGESS, Secretary.

Brandling Junction.

BRANDLING JUNCTION RAILWAY.

RETURN of Accident.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Apr. 14.	Chas. Ruddock .	Plate-layer on the line.	Head contused, causing im- mediate death.	The deceased knocked down by the engine.	The deceased's want of care.	Nothing occurred to the train, and the coroner's verdict was Accidental Death with a deo- dand of 5 <i>s.</i> upon the engine.

April 16th, 1841.

ROBERT W. BRANDLING, Managing Director.

Dundee and New-
tyle.

DUNDEE AND NEWTYLE RAILWAY.

RETURN of Accident occurring on the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Apr. 13.	John M'Ewan	In the employ- ment of the Company as a waggon-dri- ver upon the branch line on the exten- sion from the depôt to the harbour of Dundee.	The left thigh considerably bruised, but not danger- ously so.	The man was dragging a waggon loaded with wooden sleepers down to the harbour (a part of the line being a slightly inclined plane), and he neglected to prove the suf- ficiency of the drag before enter- ing on the inclined plane, (which is one of the regulations); the consequence of this was that when he required to use the drag, he found that a rope had been acci- dentally wound round the handle in such a way as to render it use- less, and the waggon acquiring a considerable velocity, was overturned in passing along a curve, and the man's thigh was crushed between the waggon and a gate or door-post.		The place where the accident hap- pened was not a public thorough- fare, the public being excluded from that part of the railway.

Dundee and Newtyle Railway Office,
April 16th, 1841.

RICHARD BAIRD, Manager.

BALLOCHNEY RAILWAY.

Appendix.

I.
Returns of
Accidents.
Ballochney.

SIR,

Glasgow, 19th April, 1841.

I AM exceedingly sorry to have to send to you the enclosed return of a fatal accident which happened on Friday last to James M'Ewan, one of the servants of the Ballochney Railway Company, in the manner specified in the return.

In sending me this return, Mr. Dodds writes to me, that since completing his return, he has been informed that a few minutes before the accident, M'Ewan, who was in the house where he lodges by the side of the railway, bolted out of the door and sprung upon the train preceding the one that killed him, and for doing so was warned and cautioned by the woman of the house, but it appears to no effect. It remains only to be regretted, that for his rash conduct he paid so severe a forfeit.

S. Laing, Esq.
&c. &c.

I have, &c.
JAMES MITCHELL.

RETURN of Accident.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Apr. 16.	Jas. M'Ewan .	Railway Com- pany's Servant.	Instant death.	A train of loaded wag- gons went over his head, arm, and leg.	He very impru- dently at- tempted to leap on to the train as it passed him on the incline plane while going at a quick rate and was thrown in before the wheels.	The duty of M'Ewan was to remove the side chains from the loaded to the empty train at the foot of the inclines; and to ad- just the switches for the train, which are a little way up the incline. It appears, that after adjust- ing the switches, instead of going to his post where the chains are to be changed, he committed the rash act which ter- minated so fatally.

April 17th, 1841.

WILLIAM DODDS, Superintendent.

WHITBY AND PICKERING RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description (stating whether Passenger or Servant of the Company).	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. April 19.	Abraham Pearson	Not either .	By the lower part of the body being crushed be- tween two waggons.	By being jammed be- tween the pro- jecting ends of two loaded waggons.	Purely acci- dental.	The deceased was removing some waggons in a siding belonging to a private Com- pany, near a loading place adjoining the railway, about six miles from Whitby; and, whilst in the act of doing so, was unfortunately walking backwards, and pulling by hand a waggon after him, and by that means got entangled between it and another loaded waggon, which caused his death about two hours after the acci- dent. The jury's verdict was Accidental Death, without a deadand. The deceased was a single man, about 17 years of age.

Railway Office, Whitby, April 21st, 1841.

WM. THOMPSON, Manager.

DUNDEE AND NEWTYLE RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Remarks.
1841. April 23.	Thomas Coupar.	A porter in the employ of Mr. Mathewson, Grocer, Over- gate, Dundee.	The head crushed be- neath the wheels of one of the passen- ger carriages, causing in- stant death.	The accident occurred at the foot of the Law inclined plane at Dundee, at the starting of the 5 P.M. coach-train to the north. It is necessary to hang the coaches on the incline previous to their final starting; but, before this is done, a bell is always rung to warn the passengers that the train is about to be moved; and Coupar (who had been putting a bag of seed into one of the boots) was standing upon the foot-board of a first-class carriage, at the moment the fixed engine at the top of the incline started for the purpose of hanging on the coaches. He lost his balance, and fell betwixt the coach on the foot-board of which he was standing and the next coach of the train,

and his head resting upon one of the rails, the two eastmost wheels of the next coach, containing a considerable number of passengers, went over his head, crushing it, and causing instantaneous death. Coupar had been frequently employed in putting luggage, &c. on the coaches before, and no doubt understood the nature of the warning signal perfectly well, but had neglected to be on his guard at the starting of the train. On the morning of Saturday, the 24th instant, being the day after the accident, the directors met to investigate the case; and, after examining the witnesses, came to the following conclusion:—"The meeting having now completely ascertained the circumstances attending the accident, did not consider that the slightest blame attached to the servants of the Company, or that it arose from any deficiency in the regulations connected with the starting of the trains." The directors instructed their clerk to forward a full copy of this minute to the procurator fiscal for the district, for his information.

Dundee and Newtyle Railway Office,
April 26th, 1841.

RICHARD BAIRD, Manager.

Appendix.

I.
Returns of
Accidents.

Midland Counties.

MIDLAND COUNTIES RAILWAY.

DEAR SIR,

Leicester, 28th April, 1841.

I REGRET having to transmit you the annexed report.

The unfortunate man was a policeman on the line, and had been up to Leicester to be measured for his uniform. He was too late for the passenger-train, and got up on the break-carriage, with the breaksman. The engine-driver had promised to slacken for him; but, in about a quarter of a mile, as I am assured by the breaksman, and in opposition to his wishes, he persisted in getting off: he fell, and a waggon of corn which had been taken on on the road, and hung behind the break-carriage, ran over his foot, and rendered amputation of the leg below the knee necessary.

S. Laing, Esq.,
&c. &c.I have &c.,
J. T. BELL, Secretary.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. April 27.	William Lacey .	Policeman .	Lost his leg .	Run over by a luggage-waggon.	Fell in getting down from the break whilst the train was in motion.	

J. T. BELL, Secretary.

BIRMINGHAM AND GLOUCESTER RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. April 27.	James Dudley	Train porter, employed by the Company.	Fracture of the skull and right arm.	A fall from a railway carriage (upon his head), at Echington.	It is supposed that he missed his hand-hold in getting down as the train was stopping.	The deceased was taken into the station-house immediately after the accident had occurred, and a surgeon sent for, but life was extinct in about three minutes after the accident. The coroner's inquest was held yesterday, the 29th instant, when a verdict was returned,—“That the deceased was accidentally killed by falling from a railway carriage, and that no blame attaches to any person.”

WILLIAM BURGESS, Secretary.

MONKLAND AND KIRKINTILLOCH RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. May 5.	John Prentice	Waggoner to the Coltness Iron Company.	His body a little bruised.	An empty waggon ran over him.	His feet slipped on the rail, while in the act of taking off the tail-chain of his horse from the waggon.	He, the said John Prentice, was in the act of putting several empty waggons, drawn by a horse, into a lay, when the accident happened. Immediately after receiving the injury, surgical assistance was procured, and his body examined. There were several bruises about the body, but nothing very serious.

MIDLAND COUNTIES RAILWAY.

Midland Counties.

DEAR SIR,

Leicester, 10th May, 1841.

I REGRET having to forward you the enclosed report of an accident on Friday last at Barrow.

I send you the evidence (attested by the Coroner) from whence you will observe that the jury expressed their *unanimous opinion* that the unfortunate sufferer was alone to blame. You will also see that such was his own admission to the surgeon and station-master.

Should you wish for any explanation, I shall be at the Victoria Hotel on Wednesday morning next, and would call upon you if you wish it.

S. Laing, Esq.,
&c. &c.I have, &c.,
J. T. BELL, Secretary.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. May 6	Antony Sewell .	Passenger .	Killed . .	Run over by the train.	Crossing the line in front of the engine, when the engine was pulling up at Barrow Station; knocked down by the engine.	Had been requested by the Station-master to cross in ample time, to cross safely. Having delayed, was requested to remain where he was till the train had passed.

J. T. BELL, Secretary.

NEWCASTLE-UPON-TYNE AND CARLISLE RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. May 10	A man-servant of R. L. Allgood, Esq., name not ascertained.	Passenger .	A bruise on the face.	A truck on which his master's carriage was, together with two other carriages, got off the line, and he lost his balance and fell, although none of the carriages were thrown over. He was sitting on the servants' seat behind the carriage.	A bale of goods having got disengaged and fallen from one of the carriages which was before the others, and nearer the engine.	It was doubtful whether so trifling an accident should be returned.

Newcastle-upon-Tyne, May 12, 1841.

JOHN ADAMSON, Clerk to the Company.

WISHAW AND COLTNESS RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. May 10	Hugh Loughrey	Rail-layer, servant of the Company.	Severely injured internally, which caused death in about two hours.	Two empty waggons passed over his body in an oblique direction.	Locomotive engine ascending Cleland Branch of Wishaw and Coltness Railway, when near to Stevenson	The locomotive engine and train was not proceeding at a greater speed than about one and a-half miles per hour when the accident took place. The engine-driver had shut off his steam, in order to take on the waggon to his train. It is supposed the deceased had been leaning considerably forward with his body, while putting his waggon in motion, and when the engine train had come in contact with his waggon, and taken it out of his hand, he had not been able to recover his centre of gravity.

Woodend by Billahill, May 11, 1841.

ROBERT DODDS, Resident Engineer,
Wishaw and Coltness Railway.

EASTERN COUNTIES RAILWAY.

RETURN of Accident occurring in the course of public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. May 16	William Cox .	Stoker in the Company's service.	Leg broken above the ankle.	His leg slipped between the tender and engine at the time of the engine going off the line.	As the half past four o'clock up train was coming slowly into the Ilford Station, the points were wrong, and before the train could be quite stopped, the engine went off the line.	The man was taken immediately to the London Hospital where his leg was set. In answer to inquiries made this morning, he is stated to be doing very well.

Eastern Counties Railway Office, High Street, Shoreditch,
May 17, 1841.

ANTHONY BULKELEY, Secretary.

EASTERN COUNTIES RAILWAY.

RETURN of Accidents on the Works.

Date.	Names of Persons Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. May 15	. .	Contractor's labourer.	Arm broken and otherwise bruised.	Struck by a fall of earth at the Brentwood Hill cutting.	Earth unexpectedly giving way.	Doing well.
May 18	. .	Ditto . . .	Small bone of leg broken; lower part of body injured.	Ditto	Ditto	Ditto.
May 19	. .	Ditto . . .	Bruised on the body slightly.	Fell from the barrow-road on to a waggon bumper at Brentwood Hill contract.	Falling from the barrow road.	Ditto.

Eastern Counties Railway Office, High Street, Shoreditch,
May 21, 1841.

ANTHONY BULKELEY, Secretary.

EDINBURGH AND DALKEITH RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. 26th May	James Hazlewood	Waggon driver employed by the Company.	Legs and body crushed and one leg fractured; and he died in about six hours afterwards.	He slipped and fell when leaping off the trains of the second hindmost waggon of a train of loaded coal waggons while in motion; and it is probable that the wheels of the two waggons passed over one leg about the knee, and at the same time grazed his other leg and one of his sides.	It is supposed that one of the dragging hooks, which are fixed so as to project a little above the tram, caught his toe as he was leaping off the waggon, but no one has yet been found who saw it happen, and he could not himself give a distinct account.	He was immediately conveyed on a litter from St. Leonard's dépôt, where it happened, to the Edinburgh Infirmary; and died in about six hours afterwards. I cannot blame any one, but I intend to request the owner of the waggons to shift or remove the drawing-hooks.

Edinburgh Station,
May 27, 1841.

D. RANKINE, Manager.

LONDON AND GREENWICH RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Names of Persons Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. May 28, about half-past 2.	John Nash . .	Conductor or guard of the train.	Broken leg .	Carriage thrown off the line, and John Nash fell under it.	A log of wood or post which had been left on the line by the preceding up-train, for a fence to be erected while the parapet wall had been pulled down for the purposes of the works for widening the railway.	A watchman had been placed at the spot to keep the line, who from negligence omitted to remove the post from the rails, and alleges as his excuse that he did not see it. The engine-man fortunately observed the post on the rails, and reversed his engine.
	John Dilderfield	A carpenter's labourer in the employ of the Company.	Injured spine .	Alarmed at the carriage being thrown off the line, he jumped off the new works in the hope of getting on the scaffolding-pole, from whence he fell.		

May 29, 1841.

J. L. AKERMAN, Secretary.

GREAT NORTH OF ENGLAND RAILWAY.

RETURN of Accident.

Date.	Name of the Person Injured.	Description.	Nature of Injury.	Cause of Accident.	Remarks.
1841. June 1.	Marshall Hutchinson, aged 41. Returning from York to Darlington.	Conductor to the train.	Concussion of the brain.	Supposed to have fallen on the roof of the carriage in a fit, near Thirsk.	Doing as well as can be expected under the circumstances. Brought to his own house in Darlington.

D. O'BRIEN, Secretary.

Appendix.

I.
Returns of
Accidents.Great North of
England.

EASTERN COUNTIES RAILWAY.

RETURN of Accident on the Works.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. June 2.	Ward (boy)	Contractor's waggon driver.	Ribs broken, and severe contusion of the knee.	While driving an empty waggon on an incline of the Brentwood Hill works, he fell between the horse and the waggon, when the latter passed over him.	The waggon passing over him on falling, as described in the preceding column.	Under the care of Mr. Butler, surgeon, Brentwood.

Eastern Counties Railway Office, High-street, Shoreditch.
June 5, 1841.

ANT. BULKELEY, Secretary.

SHEFFIELD AND ROTHERHAM RAILWAY.

Sheffield and
Rotherham.

RETURN of Accident occurring in the course of the public traffic.

Date.	Names of Persons Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. June 3.	James Bates	Engine driver.	Severely scalded, and violent concussion by falling with the engine.	Train upset	Breaking of one of the tender axles.	Coroner and jury now sitting.
	John Richardson	Stoker	Killed	Tank of the tender falling upon him.	Breaking of the above axle	Jury sitting.

SIR,

June 5th, 1841.

ABOVE I hand you a return of an accident which occurred on this Railway, and will write again so soon as I obtain a copy of the verdict.

G. R. Porter, Esq.
&c. &c. &c.

I am, &c.,

THOMAS PEARSON, Secretary.

Substance of the evidence given at the inquest before Thomas Lee, Esq., Coroner, and a respectable jury of sixteen jurors, held at the Station Inn, Brightside, Bierlow, in the parish of Sheffield, county of York, on Saturday, the 5th day of June, 1841, on the bodies of John Richardson and James Bates.

It appeared that the North Midland train, from Sheffield to Leeds, was despatched from Sheffield station at half-past 7 o'clock in the evening of 3rd of June, consisting of three passenger carriages (one of each class) and seven luggage waggons, all belonging to the North Midland Company, who have the management of the Sheffield station.

The power is provided by the Sheffield and Rotherham Company as far as Masbro', and accordingly their engine called Victory, with its tender, was attached to the train.

It further appeared that in consequence of some alterations at the station, which have been some time in progress by the North Midland Company, that they have been unable to turn the engines, and the practice has been for some months to run the trains downward out of the Sheffield station, with the tender before the engine, which was the case in this instance.

The men were proved to be perfectly sober and fully competent; and the train proceeded without interruption for several miles, when it appeared that just at the place where, according to the Company's rules, the steam ought to be shut off and the break applied, the fore axle of the tender broke within a few inches of the wheel, in consequence of which the tender, the

D

Appendix.
—
I.
Returns of
Accidents.
—
Sheffield and
Rotherham.

engine, and carriages, were thrown off the rails, the engine falling over on to its side. The stoker, Richardson, who it would appear was applying the break at the time, was found dead, with the tank upon his chest, on the left side of the rails. Bates, the driver, was thrown on the other side, immediately opposite to the engine, and was alive, but much scalded. He was quite sensible, and was immediately conveyed to the Sheffield Infirmary, where he died in about five hours afterwards. To the person who accompanied him to the Infirmary, and also afterwards to the house surgeon, in answer to their inquiries as to the cause of the accident, he stated, "the axle broke, and that's all I know about it."

It was also proved that the line was in good order, and that no outward defect appeared in the axle, which was made by Messrs. Robert Stephenson and Co., of Newcastle, and had been in work upwards of two years, and had lately been subjected to inspection. The broken axle was produced, and from the fracture it appeared that the defect was entirely internal, and could not have been seen externally. Several witnesses stated their opinion that danger was increased by running the tender before the engine, and that the strain upon the axle is the greatest when the break is forcibly applied. The engine has six wheels, not coupled; the tender has four wheels. The jury retired for about half an hour, and returned the following verdict:—

"We find that the deceased, James Bates and John Richardson, came to their death by accidental causes, arising from a defect in the axletree of the engine-tender, which was not visible; and we urge upon the Railway Company the necessity of never allowing the tender to precede the engine. Deodand on the tender, 1s."

The above is a true copy of the verdict, made his 8th day of June, 1841.

THOMAS PEARSON,
Secretary to the Sheffield and Rotherham Railway Company.

Bolton and
Preston.

BOLTON AND PRESTON RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. June 4.	David Jones	Engine driver, in charge of a passenger train.	Contusions on the head and side; the fingers of one hand and the toes of one foot crushed.	The man had left his engine while the train was proceeding at the usual speed, and got on the top of the carriage next the tender, for the purpose, it would seem, of speaking to the guard, who was in his proper place on the next carriage, and he was knocked down with great violence by coming in contact with the first bridge the train passed under; he then fell between the carriages, and one or more of the wheels passed over some of his fingers and toes.		David Jones was not the servant of the Bolton and Preston Railway Company, but of the Manchester and Bolton Railway Company, who find power and carriages for the Bolton and Preston line; his home being at Manchester, he was conveyed to the Infirmary there, and according to the report received to-day, his injuries, though serious, are not likely to prove fatal.

PETER SINCLAIR,
Secretary of the Bolton and Preston Railway Company

Stockton and
Darlington.

STOCKTON AND DARLINGTON RAILWAY.

ACCIDENT, May 31st, 1841.

Name.	Injury.	Particulars.
Wm. Wight oak .	Killed .	John Gray, engine-man, with the Ocean engine, was descending from Shildon, towards Darlington, with his engine, and a loaded train of waggons; when near to the water-house at Darlington the engine was detached from the waggons, for the purpose of getting water, and for the waggons to pass over the weigh. William Wight oak, a passenger, was sitting on the water barrel, with his back towards the engine. He had placed a bundle on the first waggon; when he found the waggons (then moving at the rate of four or five miles per hour) were detached from the engine, he reached for his bundle; by so doing he fell in front of the waggons, with both legs over one of the rails; his right leg and left thigh were broken, with other injury, which caused his death in about three hours after. Two medical men were in attendance. An inquest was held on the 1st June instant, before William Trotter, Esq., Coroner, when a verdict of Accidental Death was returned, with a deodand of 1s. on the first waggon.

June 4th, 1841.

Signed, by Order of the Committee of Management,
SAMUEL BARNARD, Secretary.

LIVERPOOL AND MANCHESTER RAILWAY.

RETURN of Accident in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.
1841. June 4.	John Hunt . .	Coach porter .	One wheel passed over his legs; reported at present to be fracture of one ankle and the other leg to have the muscular part injured.	Unhooking the chain connecting the parcel van with a coach, whilst the horse drew them back against some other coaches, in order to enable him to do it by means of the collision driving in the springs.	He had stepped upon the floor of the Arrival Station previously, and on stepping down again to accomplish his object, he from some cause slipped.

Appendix.

I.
Returns of
Accidents.Liverpool and
Manchester.

MIDLAND COUNTIES RAILWAY.

Midland Counties.

RETURN of Accident in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. May 31.	Thomas White .	Passenger . .	Severely shook and ribs broken.	. .	Jumped out of the train when travelling near Borrowash.	This person had been in the constant habit of travelling on the railway, but got into the wrong train, and when he found out his mistake he jumped out.

J. T. BELL, Secretary.

EASTERN COUNTIES RAILWAY.

Eastern Counties.

RETURN of Accident on the Works.

Date.	Names of Persons Injured.	Description.	Nature of Injuries.	Nature of Accident.	Cause of Accident.	Remarks.
1841. June 11.	William Baker .	Excavator . .	Thigh broken .	Fall of earth, Brentwood Hill cutting.	Carelessness	Under the care of a surgeon at Brentwood and doing well.
	James Spindle .	Ditto	Slightly bruised .	Ditto	Ditto	Nearly recovered.
	John Thomson .	Ditto	Ditto	Ditto	Ditto	Ditto.

ANT. BULKELEY, Secretary.

Eastern Counties Railway Office, High-street, Shoreditch,
June 14, 1841.

SHEFFIELD, ASHTON-UNDER-LYNE, AND MANCHESTER RAILWAY.

Sheffield,
Ashton-under-Lyne,
and Manchester.

SIR,

No. 15, Piccadilly, Manchester, June 19, 1841.

In pursuance of the instructions received from the Lords of the Committee of Privy Council for Trade, I forward to you the particulars of two accidents which have lately taken place upon this line.

1. On Sunday, the 6th instant, Joseph Howarth, a miner, native of Oldham, in Lancashire, was killed at the works now proceeding with at the Summit Tunnel, Woodhead, by falling down an air shaft. Inquest held on the 8th instant; verdict, "Accidental Death."

2. On Monday, the 14th June instant, George Bally, a slide turner, was hurt by an earth waggon falling over both his legs, and died during the process of amputation; the verdict of the inquest I have not yet received.

Our line not being opened for traffic, does away with the necessity of attending to the returns received on the 17th instant from you.

S. Laing, Esq.
&c. &c.I am, &c.,
JOHN PLATFORD, Secretary.

Appendix.

I.
Returns of
Accidents.St. Helen's and
Runcorn Gap.

ST. HELEN'S AND RUNCORN GAP RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. June 19.	Henry Webster.	Porter in the employ of the Company.	Shoulder crushed.	Concussion.	He omitted to put down the break of the waggon on which he was riding down a slight incline.	Doing very well.

JOHN HOLFENDEN.

Liverpool and
Manchester.

LIVERPOOL AND MANCHESTER RAILWAY.

SIR,

Lime-street Station, Liverpool, June 25, 1841.

I AM sorry to have occasion to transmit to you particulars of an accident to Joseph Adamson, a labourer on this line, who was thrown over Barton embankment, (between Chatmoss and Patricroft,) along with a small lorry, on which he was riding. He received several severe cuts in the head, and was much bruised. The lorry was attached to one of the trains, as is not unfrequently done by the workmen for their accommodation, and was considered in good order. The cause of its quitting the rails is not known.

G. R. Porter, Esq.,
&c. &c. &c.I am, &c.,
HENRY BOOTH.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. June 22.	Joseph Adamson.	Labourer for repairing fences, &c.	Several severe cuts on the head, and otherwise much bruised.	Had been repairing some fences near Manchester, and was going to Bury Lane, where he resides, on a small lorry attached behind the 5½ P.M. train.	When near the end of Barton embankment the lorry, from some cause, left the rails, and together with Adamson was thrown over the embankment with considerable force.	The lorry appeared to be in good order, and had been in use for several years.

HENRY BOOTH.

Wishaw and
Coltness.

WISHAW AND COLTNESS RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. June 21.	James Gilday.	Labourer—servant of the Company.	Fractured leg.	One wheel of a loaded waggon passed over the leg.	A horse-train of loaded waggons was passing along the main line of railway at Holytown-road Bridge, where the man was standing with his back to the waggons lighting his pipe, when the waggon struck him, and the first wheel passed over his leg.	Speed which horse-train was going at would be about two miles and a-half an hour, and the man was taken out before the second wheel came to his leg. The man has been sent to the Glasgow Royal Infirmary.

Woodend by Billshill, 24th June, 1841.

ROBERT DODDS, Resident Engineer.

Sheffield, Ashton-
under-Lyne, and
Manchester.

SHEFFIELD, ASHTON-UNDER-LYNE, AND MANCHESTER RAILWAY.

SIR,

No. 15, Piccadilly, Manchester, 30th June, 1841.

I AM sorry to communicate to you the death of Samuel Turner, of Gorton, near this town, a single man 30 years of age, a labourer on the "Ardwick Contract," on the 23rd, by getting entangled betwixt the buffers of the earth-waggons whilst in the act of uncoupling the horses. He had worked on this contract about 10 months. The coroner's jury returned a verdict of "Accidental Death."

S. Laing, Esq.,
&c. &c.I am, &c.
JOHN PLATFORD, Secretary.

GRAND JUNCTION RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841 July 3.	Henry Shaw .	Servant of the Company.—Errand boy in parcel office at Birmingham.	Muchcut and bruised on the lower part of the body, causing instantaneous death.	Wheel of a tender passed over his body.	Carelessly standing on the end of a waggon, which an engine was very slowly approaching for the purpose of being attached to it, and the shock of the concussion occasioned his falling from the waggon to the rail.	The waggon was stationary, and the deceased was leaning over the end of it so far that the slightest shock caused him to fall. In proof of how slowly the engine was moving, it may be mentioned that only one wheel of the tender passed over the body. The deceased was proceeding on duty from the passenger station to the goods station at Vauxhall.

E. J. CLEATHER, Manager and Secretary.

Appendix.
I.
Returns of
Accidents.
Grand Junction.

LIVERPOOL AND MANCHESTER RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. July 7.	John Stubbs .	Porter . .	Instantly killed.	Between 10 and 11 p.m. he went up the tunnel at Liverpool (that proceeds from Wapping to Edgehill) on a waggon, to give notice to the engine-man that all the waggons were sent up.	In attempting to get off the waggon before the train had completely stopped, he fell under the waggon; several wheels of the train passing over his body.	He had been in the Company's service nine years, and was a remarkably steady man.

HENRY BOOTH.

Liverpool and
Manchester.

MONKLAND AND KIRKINTILLOCH RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. July 10	Robert Bruce .	Labourer at a lime-kiln, near to the Monkland and Kirkintilloch Railway.	Skull fractured.	A locomotive engine passed over his head.	While attempting to cross the railway, was knocked down by an engine and tender.	One of the locomotive engines was ascending the north line of railway with a train of limestone waggons for the kiln at which the said Robert Bruce was employed, and when nearly opposite the lime-kiln, another engine was descending the south line of railway, the said Robert Bruce, not observing the engine that was descending, leaped over a quantity of limestone that was laying near the mouth of the kiln to cross the railway, within two yards of the tender of the descending engine, when he was immediately knocked down and killed on the spot.

Monkland and
Kirkintilloch.

WISHAW AND COLTNESS RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. July 9	Abr. Ferguson .	Collier . .	Fractured head and arm, which caused death.	Two empty waggons passed over his head and arm.	Returning in empty carriages from Cambro Iron Company's store to Dalgel Colliery. Several other people with the deceased had got into the empty carriages and commenced drinking spirits, and when at Motherwell, the deceased attempted (it is supposed) to leap from the waggons while in motion, when he fell before the wheel of the carriage.	Horse train going about two miles an hour; the horse train belonged to the Cambro Iron Company, into whose employment the deceased had just entered.

Woodend by Billshill, July 12, 1841.

ROBERT DODDS, Resident Engineer,
Wishaw and Coltness Railway.

Wishaw and
Coltness.

EASTERN COUNTIES RAILWAY.

Appendix.
I.
Returns of
Accidents.
Eastern Counties.

RETURN of Accidents on the Works.

Date.	Names of Persons Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. July	. .	Contractors' labourer.	Leg broken .	Fall of earth at the Brentwood Hill cutting.	Carelessness.	Doing well.
. .	Daniel Pasterfield, (boy.)	Ditto . . .	Shoulder dislocated.	Kick from a horse which he was driving on the Brentwood Works.	See preceding column.	Ditto.
July 14	William Harris, (boy.)	Ditto . . .	Two of his fingers badly cut.	While driving a waggon on the Brentwood Works he fell, when the wheel of the waggon passed over his fingers.	Ditto . . .	Ditto.

Eastern Counties Railway Office, High Street, Shoreditch,
July 15, 1841.

ANTHONY BULKELEY,
Secretary.

Taff Vale.

TAFF VALE RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. July 16	Joseph Bentley	Engine driver	Broken ribs and other internal injuries.	Collision of two trains of empty waggons, for the carriage of coal and iron ore.	The coal train being after time appointed.	The engine-driver of the coal train was killed upon the spot.

St. Helen's and
Runcorn Gap.

ST. HELEN'S AND RUNCORN GAP RAILWAY COMPANY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. July 17	Edward Ryan	Fireman in employ of the Company.	Fracture of the skull.	. .	He fell betwixt the waggons.	. .

Newcastle and
North Shields.

NEWCASTLE AND NORTH SHIELDS RAILWAY.

SIR,

Railway Office, July 21, 1841.

I BEG to hand you particulars of a slight accident which occurred on the Newcastle and North Shields Railway on the 18th instant, to a boy about 12 years of age, who was riding on the end seat of a third-class carriage, by the seven o'clock train from Shields, and who, by an unexpected start on the train when in act of being brought up at Percy Main Station, fell off, and the flat part of the wheel of the last carriage passed over his foot on the outside of the rail. I have seen the surgeon who attended him, who informs me there is no other injury beyond a bruise.

G. R. Porter, Esq.
&c. &c. &c.

I have, &c.,
W. SWAN, Clerk to the Company.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. July 18.	Thos. Thompson.	Passenger (a boy about 12 years of age.)	Foot bruised, but no broken bones.	Falling off carriage.	The train when nearly brought up at Percy Main Station, on being relieved of the breaks had suddenly started the last carriage, by which the sufferer fell off the end of the seat, and the wheel of the next carriage caught his foot.	No blame attaches to any party; it appears to be purely accidental. The parent of the boy was also on the carriage, but the shock was so slight, he did not observe anything had happened.

July 21, 1841.

W. SWAN, Clerk to the Company.

Appendix.

I.
Returns of
Accidents.

Newcastle and
North Shields.

BALLOCHNEY RAILWAY.

RETURN of an Accident.

Date.	Name of Person Injured.	Description (stating whether Passenger or Servant of the Company).	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. July 21	Margaret M'Wakenshaw.	Neither . .	Bruised in the body.	Horse carriage went over her body.	This girl, with other little ones, it appears, had been gathering coal, &c.,	The accident happened at night, about 4 or 5 hours after the trade on the railway was over.

about the pits on the side of the railway, and, through mischief, unloosed a horse-carriage from a train of waggons, standing on the traders private branch, and pushed it along to the main line, where it descends at the rate of 1 in 45. The carriage got away from them. and the girl attempting to stop it, fell in before the wheels.

WILLIAM DODD, Superintendent.

Ballochney.

DUBLIN AND KINGSTOWN RAILWAY.

SIR,

48, Westland Row, 22nd July, 1841.

I BEG to report, for the information of their Lordships, that on the arrival of the ten o'clock train last night at the Black Rock station, a woman named O'Neill, when getting out of the coach, fell and broke the small bone of her arm immediately above the wrist; she was not otherwise injured.

There does not appear to be blame attributable to any person.

Every necessary attention was paid to her by the station keeper until removed by her husband.

G. R. Porter, Esq.
&c. &c. &c.

I have, &c.
T. F. BERGIN.

Dublin and
Kingstown.

STOCKTON AND DARLINGTON RAILWAY.

THOMAS CALVERT, of Middlesbro', labourer, employed by Richard Jonsey, foreman of the shipping staiths, Middlesbro', was connecting two waggons together, and had his elbow crushed severely by the sudden collision of the waggons.

Surgical assistance was immediately obtained, and amputation thought necessary by Mr. Coates, surgeon, of Middlesbro'.

The superintendent of police reports that he is at present doing as well as can be expected.

Signed by order of the Committee of Management,

July 23rd, 1841.

SAMUEL BARNARD, Secretary.

Stockton and
Darlington.

REPORTS to the COMMITTEE of PRIVY COUNCIL,

EASTERN COUNTIES RAILWAY.

Appendix.
I.
Returns of
Accidents.
Eastern Counties.

RETURN of an Accident on the Works.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. July 24.	Wm. Stammers.	Driver of waggons at tip.	Arm and leg broken.	Caught his foot against point of switch and fell, when the waggon went over his arm and leg.	The darkness of the night, although proper light was on the tip.	Taken to his father's residence at Chipping Hill, and is attended by Mr. Proctor, surgeon, Witham. The accident occurred on Job's Wood embankment at half-past 12 at night.

Eastern Counties Railway Office, High Street, Shoreditch,
26th July, 1841.

ANT. BULKELEY, Secretary.

Eastern Counties.

EASTERN COUNTIES RAILWAY.

RETURN of an Accident on the Works.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. July 23.	Stephen Knight, aged 14.	Waggon driver in contractor's employ.	Leg fractured and limbs bruised.	Empty earth waggon ran over his leg on the works near Lexden.	Stumbling over the rails whilst leading his horse, and before he could recover himself the waggon running over him.	Admitted into Colchester Hospital, and is reported by the surgeon to be doing as well as can be expected.

Eastern Counties Railway Office, High Street, Shoreditch,
30th July, 1841.

ANT. BULKELEY, Secretary.

Eastern Counties.

EASTERN COUNTIES RAILWAY.

RETURN of Accidents on the Works.

Date.	Names of Persons Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841 July 28.	William Wilks.	Contractor's labourer.	Severe internal injuries.	Fall of earth at the Brentwood Hill cutting.	Carelessness.	Taken to the East London Hospital.
July 29.	William Hopkins	Ditto . . .	Ribs broken, and otherwise injured.	Ditto . . .	Ditto . . .	Ditto.

Eastern Counties Railway Office, High Street, Shoreditch,
2d August, 1841.

ANT. BULKELEY, Secretary.

Newcastle-upon-Tyne and
Carlisle.

NEWCASTLE-UPON-TYNE AND CARLISLE RAILWAY.

RETURN of Accident occurring in the course of public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841 Aug. 2.	Rebecca Dobson.	Neither passenger or servant of the Company, but a labourer at a paper mill.	Killed . . .	Persisted in crossing the railway although particularly cautioned by several of her companions not to do so.	Engine ran her down.	Coroner's inquest, held 3d August; verdict Accidental Death. Deodand on the engine 1s.

4th August, 1841.

JOHN ADAMSON, Clerk to the Company.

BALLOCHNEY RAILWAY.

RETURN of Accident.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.
1841. Aug. 4.	William Heslop, residing at Case- wayend.	He was guard to the Slamanuan Railway Com- pany's passenger trains.	Leg amputated, and head slightly cut.	Right leg ampu- tated below the knee by the engine going over it.	Heslop was going along the foot-board of one of the car- riages when the train was at the passing place on the incline, and the engine tender of the descending train came in contact with him, and dragged him down among the wheels, when the engine went over his leg. He said he forgot that he was at the passing place, and did not re- collect the danger till it was too late.

WILLIAM DODDS, Superintendent.

Appendix.

I.
Returns of
Accidents.

Ballochney.

EASTERN COUNTIES RAILWAY.

RETURN of Accident on the Works.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Aug. 6.	David Train	Horse driver in contractor's service.	Splinter bone of the foot broken.	A fall of earth on the Hat- field Peverel works.	The earth falling upon him as he was passing with his horses about 3 o'clock, p.m.; having had a broken leg before, he was less active in getting out of the way.	Removed to his lodg- ing, and attended by Mr. Proctor, surgeon, Witham.

Eastern Counties Railway Office, High Street, Shoreditch,
9th August, 1841.

ANT. BULKELEY, Secretary.

Eastern Counties.

DUBLIN AND KINGSTOWN RAILWAY.

Dublin and
Kingstown.

SIR,

Dublin, 12th August, 1841.

I HAVE the honour to inform you that a melancholy accident occurred at this station on Monday evening, the 9th instant, whereby a young man named John Smith was so severely injured that his death ensued on the following day.

The inquest on the body was held yesterday, and I cannot better give you a detail of the circumstances, than by sending you the fullest report of the proceedings given in "Saunders' News Letter" of this day, and which as far as I know, I believe to be perfectly correct.

It has been a cause of the deepest regret to the Directors, and to me, that such an accident should have occurred.

I send a copy of the newspaper herewith.

I am, &c.,

G. R. Porter, Esq.,
&c. &c. &c.

JAMES PIM, Jun., Treasurer.

EASTERN COUNTIES RAILWAY.

Eastern Counties.

RETURN of Accidents on the Works.

Date.	Names of Persons Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Aug.	William Islis.	Driver at Tip,— in contractor's service.	Hand and fin- gers seriously injured, breast bruised and head slightly crushed.	Knocked down by the waggon he was driving, which went over him, on Hatfield Peverell contract.	Stopping to quar- rel with another man and not no- ticing his wag- gon, which he was taking home empty after work- ing hours, he was knocked down by it.	Taken to Colches- ter Infirmary.
"	William Claxon.	Excavator,—in contractor's service.	Ankle dislocated and leg much bruised	Fall of earth on Mountnessing contract.	Earth yielding un- expectedly.	

Eastern Counties Railway Office, High Street, Shoreditch,
16th August 1841.

ANT. BULKELEY, Secretary.

E

Appendix.

I.
Returns of
Accidents.Edinburgh and
Dalkeith.

EDINBURGH AND DALKEITH RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Aug. 18	James Black.	Waggon driver to the Company.	Arm crushed under the wheels of the foremost waggon.	His having fallen before the waggon he was driving.	His being seated upon one of the trains in front of the leading waggon while in motion, and tripping when getting off.	His arm has been amputated.

D. RANKINE, Manager.

Hull and Selby.

HULL AND SELBY RAILWAY.

SIR,

Railway Office, Hull, 21st August, 1841.

I beg leave to transmit to you the following particulars of an accident which happened yesterday to William Bell, the fireman of the engine which took the goods train from Hull at noon.

When the train arrived at the Staddlethorp Station, some additional load was taken on for the Cliff Station, near Selby, which was placed before some waggons which were to be left at Eastrington. On arriving at the Howden Station, there were other additions to the load for Selby, which rendered it necessary to detach the waggon for Cliff, from the train, as those for Eastrington had been before, in order that the goods for the stations on the line might be in proper order for being left at them in passing, and thereby avoiding the delay which would otherwise necessarily arise. Bell, after having tightened down the break, and reduced the speed to about seven or eight miles per hour, descended the steps of the tender, in order to unhook the waggon for Cliff, in doing so his foot slipped on the step of the tender, and he fell with one of his legs across the rail, some of the wheels passed over it, and of course crushed it severely; he was brought to Hull, and taken to the Infirmary here, as recommended by the surgeon at Howden, who was immediately called in, and it was found necessary to amputate the leg below the calf of it.

The case is one purely accidental, Bell has been some time in the Company's employ, and his conduct has been such as to cause him to be respected by his fellow workmen. I hope that he may soon recover.

I have, &c.

G. R. Porter, Esq.,
&c. &c. &c.

GEORGE LOCKING, Secretary.

Eastern Counties.

EASTERN COUNTIES RAILWAY.

RETURN of Accident on the Works.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Aug. 26	John Hares .	Excavator in contractor's employment.	Killed . .	A fall of earth in the night on Brentwood Hill contract.	The earth unexpectedly giving way.	The unfortunate man came from West Haddon, near Daventry.

Eastern Counties Railway Office, High Street, Shoreditch,
28th August, 1840.

ANT. BULKELEY, Secretary.

Dublin and
Kingstown.

DUBLIN AND KINGSTOWN RAILWAY.

SIR,

Dublin, 5, Westland Row, 28th August, 1841. .

I REGRET having to report that an accident, attended with personal injury, occurred on Sunday evening the 15th instant. The sufferer, a boy named Reeves, not a passenger, improperly and incautiously attempting to cross the rails, was caught by the foot, which was crushed by one of the wheels passing over it. The Surgeon-general, Sir Philip Crampton, was in immediate attendance, and amputated the injured member. Sir Philip has since been in constant attendance, and has now pronounced the patient out of danger.

This communication was delayed in consequence of my being absent from Dublin at the time of the accident, and for some days after; and the time limited by their Lordships' order having elapsed, I thought it well further to delay it till I could report the result.

I have, &c.

G. R. Porter, Esq.,
&c. &c. &c.

T. F. BEEGIN.

NORTH UNION RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Aug. 27.	Josias Joliffe.	Servant of the Company.	Killed.	By his head striking against the rails.	In consequence of jumping off the waggon while in motion.	Verdict of the Coroner's Inquest, "Accidental Death."

G. R. PORTER, Esq.,
&c. &c. &c.

JAMES CHAPMAN, Secretary.

Appendix.
I.
Returns of
Accidents.
North Union.

SHEFFIELD, ASHTON-UNDER-LYNE, AND MANCHESTER RAILWAY.

SIR,

No. 15, Piccadilly, Manchester, August 30, 1841.

I AM sorry to have to communicate to you another accident on this line, causing the death of a man named Daniel Mill, banksman, aged 25, native of Cheltenham, in the county of Gloucester, by the breaking of one of the cross stays, in letting down pump-trees into No. 3 shaft, which struck him on the head and caused a concussion of the brain. He died in 16 hours after the accident.

I will forward you the verdict of the Coroner's jury so soon as I receive it.

I am, &c.

S. Laing, Esq.,
&c. &c. &c.

JOHN PLATFORD, Secretary.

Sheffield, Ashton-under-Lyne, and Manchester.

GREAT WESTERN RAILWAY.

SIR,

London Terminus, Paddington, 8th September, 1841.

It is my duty to acquaint you, for the information of the Lords of the Committee of Privy Council for Trade, that an accident has occurred to the mail train of last night, on its way from Bridgewater to Paddington, owing to a sudden slip of the embankment on the incline, between Wootton Bassett and Chippenham, about 86 miles from London. I am as yet very imperfectly informed of the circumstances of the case, excepting that there were two locomotive engines attached to the train, the foremost of which passed over the slip and the second was thrown from the rails, which occasioned serious injury to the carriages, also thrown off the line.

I regret to say, that one gentleman had his leg broken and was obliged to be left at Wootton Bassett for surgical assistance. Two or three other passengers were, I am informed, bruised by the blow, but they have been able to proceed on their journey, and no serious mischief has befallen any passenger by the train, excepting in the case of the fracture reported by me.

I have, &c.

Lieut.-Colonel Sir Frederick Smith, R.E.,
&c. &c. &c.

CHARLES A. SAUNDERS, Secretary.

Great Western.

NORTH UNION RAILWAY.

RETURN of Accident occurring in the course of the public traffic on the 7th Sept. 1841.

Date.	Names of Persons Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Sept. 7.	Mr. Jas. Threlfall.	Passenger per train	Fracture of the leg, slight.	Concussion of two trains.	The London down mail overtaking and running against the Liverpool and Manchester regular train at Farington station, in thick rainy weather.	Surgeons report parties all recovering and doing well.
	Mr. Bowness.	Do.	Fracture of the knee pan.			
	Mr. Thos. Jackson.	Do.	Shoulder bruised.			
	Mr. Turner.	Do.	Face slightly cut.			
	Thomas Picknol.	Company's servant; guard of the train.	General concussion, slight.			
	Mr. and Mrs. Nicholson, daughter, and two servants.	Passengers per train.	Bruised, but gone on to Fleetwood.			

North Union Railway Office, Preston,
9th Sept. 1841.

JAMES CHAPMAN Secretary.

North Union.

NORTH UNION RAILWAY.

Appendix
I.
Returns of
Accidents.
North Union.

RETURN of Accident occurring in the course of the public traffic on the 7th Sept. 1841.

Date.	Names of Persons Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Sept. 7.	Rev. Mr. Ivy.	Dissenting minister, passenger by stage coach.	Fracture of both thighs and one leg. General concussion. Killed.	A collision at a crossing on the level in Euxton township, of the Chorley Road and the Railway.	The Southport stage coach coming in contact with a collier's engine and train of empty coal waggons, belonging to Mr. Pearson, of Ince Colliery Wigan.	Death almost instantaneous.
	Mrs. Ivy.	His wife, passenger by stage coach.	Concussion of the spine, not serious.			Surgeons report all recovering and doing well.
	Mr. Ward.	Innkeeper, ditto	General concussion, not serious.			
	Miss Paton.	Ditto	Bruise of the arm, not serious.			
	Mr. Craig.	Ditto	Slight concussion of the brain, fracture of the clavicle.			
	Mrs. Greer.	Ditto	Slight concussion of the brain.			Leg amputated, but going on well.
	Henry Elston.	Coachman of stage coach.	General concussion, bruise of the kidney and loin.			
	John Arnold.	Servant of coach proprietors.	General concussion, slight.			
	John Eccles.	Toll-bar keeper, passenger by stage coach.	Slight general concussion.			
	Thos. Nickson.	Company's servant. Gatekeeper of Euxton station.	Compound dislocation of the ankle joint, with fracture.			

North Union Railway Office, Preston, 9th Sept. 1841.

JAMES CHAPMAN, Secretary.

Manchester and
Birmingham.

MANCHESTER AND BIRMINGHAM RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Sept. 10.	— Baxter.	Platelayer, employed by the contractor.	Four toes crushed.	Wheel of tender passed over the man's foot.	Rashness of the person injured.	In compliance with a signal given, because the road was undergoing repair, the speed of the train had been reduced to about eight miles an hour. The man injured ran in front of the train to remove a tool from between the rails, was struck by the buffer, and fell with his foot under the wheel of the tender.

10th Sept. 1841.

MATT. LYON, Acting Director.

Eastern Counties.

EASTERN COUNTIES RAILWAY.

RETURN of Accident on the Works.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.
1841. Sept. 11.	William Brown.	Excavator, in the contractor's employ.	Leg severely fractured.	A fall of earth on Brentwood Hill contract.	The man's own carelessness, as he was cautioned several times.

Eastern Counties Railway Office, High Street, Shoreditch.
14th September, 1841.

ANT. BULKELEY, Secretary.

Glasgow and
Paisley.

GLASGOW AND PAISLEY JOINT RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Sept. 13.	Peter Mc.Donald.	Soldier, private, 10th Regt. of Infantry.	One of his toes crushed.	Struck by the train.	The man attempted to get on a train in motion.	This man took a ticket for the 20 minutes to 9, p.m. train, from Paisley to Glasgow, but instead of going into a carriage, passed from the platform, unobserved by the police, and walked a quarter of a mile up the line towards Glasgow, accompanied by a female. When the next train was passing him he attempted to get on it, and in doing so was hurt as stated.

JNO. WASS, Manager.

GREAT WESTERN RAILWAY.

Appendix.

I.
Returns of
Accidents.

Great Western.

SIR,

Princes Street, Bank, 16th September, 1841.

SINCE I had the pleasure of seeing you to relate the circumstances under which the accident to the Exquisite coach occurred at Bridgewater, I have visited the spot, and made myself fully acquainted with every particular. The Directors are gratified to learn that the Lords of the Committee of Privy Council for Trade, concur in the sentiments I expressed to you at that interview, that it would be advisable to require the coaches, even at some loss of time, to wait until the engine shall have removed the carriages beyond the crossing, an order which I had previously given and have since confirmed.

The Exquisite coach having received all her passengers at the railway station, on the occasion alluded to, proceeded to cross the line beyond the station, notwithstanding the remonstrance of the policeman, while the locomotive engine was removing the railway carriages. The coachman who was well acquainted with the place, and the mode of shifting the carriages, whipped his horses across the rails in order to precede the engine, at the moment at which he was cautioned to stop. The passengers, I am informed, saw the whole transaction, and state that no blame can be attached to any one but the coachman, who both saw and heard the engine whistling, and must have known the risk he incurred.

The engine, moving very slowly, struck the coach, which was thrown over and much broken. The passengers escaped with contusions only, but a woman standing at the spot, although previously warned twice to leave, was unfortunately knocked down, and seriously injured. She is, however, alive, and hopes are entertained of her recovery.

I have, &c.

S. Laing, Esq.,
&c. &c.

CHAS. A. SAUNDERS, Secretary.

EASTERN COUNTIES RAILWAY.

Eastern Counties.

RETURN of an Accident on the Works.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Remarks.
1841. Sept. 7.	George Cranmer.	Bricklayers' labourer, in the contractor's employment.	Hand lacerated, and internally bruised. He is now labouring under brain fever.	Fell off a plank.	This accident occurred on the 7th inst., but was only reported on the 16th inst., the contractor not being aware of the same.

Eastern Counties Railway Office, High Street, Shoreditch,
17th September, 1841.

NATH. DAVIES, for the Secretary.

EASTERN COUNTIES RAILWAY.

Eastern Counties.

RETURN of an Accident on the Line.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Sept. 18.	Samuel Elson.	Pointman, in the Company's service; unmarried, and about 35 years of age.	Leg broken above the knee.	His leg slipped across the rail in consequence of his getting off the engine before it had fully stopped, and the engine passed over it.	Carelessness,—as he was cautioned by the engine-driver not to get off. He has frequently admitted that it was entirely his own fault.	This accident occurred at night, a little way beyond Stratford, about an hour after the passenger-trains had done running. The man injured accompanied Robert Taylor, driver of engine No. 11, with two trucks loaded with rails from the Stratford Station to Ilford Station, and when returning near the Stratford Station attempted to get off whilst the engine was moving very slowly, although cautioned by the engine-driver not to do so. He was taken to the London Hospital, and had his leg amputated. He is now doing well.

Eastern Counties Railway Office, High Street, Shoreditch,
20th September, 1841.

NATH. DAVIS, for the Secretary.

Appendix.
I.
Returns of
Accidents.
Glasgow and
Paisley.

GLASGOW AND PAISLEY JOINT RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Sept. 22.	George Donaldson.	Policeman in the Company's service.	Death.	Struck by the buffers of the engine.	The man attempting to cross the road when the engine was too close to him.	His duties were the 'ordinary duties of a policeman. He was standing upon the slope of the cutting, at about twenty yards from the west face of the tunnel at

Arklestone; and upon hearing the one o'clock train from Glasgow coming, he ran down the slope with the intention of crossing the road to give the signal to the train when passing, but the engine at the time was too close to him to admit his so doing. He was struck by the buffers of the engine and killed.
The tunnel lies nearly east and west; and he being on the slope at the down roadside, and close to the west face of the tunnel, and the train coming from the east, he could not judge the proximity of the engine till it was too late.

JNO. WASS, Manager.

Manchester and
Leeds.

MANCHESTER AND LEEDS RAILWAY.

RETURN of Accident occurring in the course of public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Sept. 25.	Robert Law.	Farmer, and neither passenger nor servant of the Company.	Broken legs and arms.	It is supposed that he must have got upon the rail and fallen asleep.	A train ran over him.	The man was seen by 2 persons going on the line in a state of intoxication.

W. ROBINSON.

Dublin and
Kingstown.

DUBLIN AND KINGSTOWN RAILWAY.

RETURN of Accident occurring in the course of public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Cause of Accident.	Remarks.
1841. Sept. 30.	James Brown.	Passenger.	Simple fracture of leg.	Leaping out of a train at full speed.	Immediately removed to "City of Dublin" Hospital, where the bone was at once set; and on inquiry in the evening, ascertained there was not any other injury, nor any appearance of unfavourable symptoms. Said that when getting out was quite aware of the risk he was incurring, and could not say why he did so.

2nd October, 1841.

T. F. BERGIN.

London and
Brighton.

LONDON AND BRIGHTON RAILWAY.

SIR, Angel Court, Throgmorton Street, 4th October, 1841.

I AM instructed to inform you, in compliance with the regulations of the Lords of the Privy Council of the Board of Trade, that an accident of a very serious description occurred on that part of the railway between the Ouse Viaduct and Hayward's Heath, on Saturday last, to the 10.45 down train, whereby two fishermen and two second class passengers were killed, and an engine-driver and guard very much injured—no other person was hurt materially.

Full and detailed particulars will be forwarded to you, as soon after the Inquest as possible, for the further information of their Lordships.

I have, &c.

S. Laing, Esq.,
&c. &c.

THOMAS WOOD, Secretary.

LIVERPOOL AND MANCHESTER RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Remarks.
1841. Oct. 8.	John Lea.	Labourer.	His head and face much bruised, and one eye severely cut.	He got in the 7 A.M. train from Liverpool at Eccles, and a little before the train reached Manchester, leaped off, and was thrown with great force against some railing by the road side.	He is a steady, sober man, and has generally been careful.

H. BOOTH.

Appendix.

I.
Returns of
Accidents.Liverpool and
Manchester.

WISHAW AND COLTNESS RAILWAY.

RETURN of Accident occurring in the course of public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Oct. 5.	Wm. Fitzpatrick.	Labourer in the employ of Wm. Jeffs and Sons, one of the Railway contractors.	Fractured limb.	One wheel of engine passed over the limb.	When in the act of crossing the Railway with a chain in his hand to couple his employer's waggon to the down going train, his foot caught one of the rails of the up coming road, where he fell, and the up coming engine passed over his leg with one wheel.	The accident occurred at the station near to the Edinburgh and Glasgow road, by Shotts, where the engines are supplied with water. The down going engine had just got a supply of water, and was standing until the man had attached the empty waggon. The up coming engine was coming very slowly along the line at the same time, when the man, unperceived by

the engineer, ran across the rails before the engine, and when the engine was at the time within a yard or two of him. The man was taken immediately to the Glasgow Royal Infirmary, where he died immediately after the fractured limb was amputated.

Woodend by Billahill, 6th Oct. 1841.

ROBERT TODD, Resident Engineer.

HULL AND SELBY RAILWAY.

Hull and Selby.

SIR,

Railway Office, Hull, October 9, 1841,

I HAD the pleasure of writing to you on the 6th instant, with answers to sundry questions transmitted by you, and regret exceedingly to have to transmit to you now, the particulars of an accident to John Meesom, one of the gatekeepers at the Skillings Lane Gate, which is about twenty-two chains from the Brough station, eastward, by which he was unfortunately killed on the evening of that day.

The last train from Selby to Hull reached the Brough station about twenty-one minutes past nine o'clock, P. M., and remained there about four minutes, during which time the engine-driver oiled the engine, and examined it, in order to endeavour to ascertain the cause of a squeaking noise which he had heard before arriving at Brough. As he did not find out the cause whilst the engine was stationary, he thought he could do so when the engine was in gentle motion after leaving the station; Howard, (the engine-driver,) had whistled before leaving the station, and did so very loudly, as is admitted on all hands, before leaving it; and, expecting the gatekeeper at Skillings Lane to be at his post and open the gates, he desired the fireman to hold the lamp, whilst he looked along the engine, which he did, and Howard ascertained that the cause of the noise he heard was the stuffing of the spindle being loose; on lifting up his head and looking forward he saw the red-light, and immediately called out to the fireman that the gates were shut, at the same time he laid hold of the regulator, but was too near the gates to be able to stop the engine and train, which went through them. He looked forward on the engine to see if any part of the gates was on the engine, but finding all clear he put on the steam again and proceeded to Hull, where the train arrived at ten o'clock. I was on the platform at the time, and he immediately came to me to report the neglect of the gatekeeper, and that he had gone through the gates—not, however, anticipating in the slightest degree any other accident. The following morning a man came from Brough, to state that the gatekeeper was killed near the gate; and it was allowed on all hands that the man must have been asleep in his box, but had been awakened by the whistle, perhaps not fully so, and rather stupefied, and in endeavouring to go to the gates had not been in time to open them, and was struck down by the engine. This gatekeeper who had the night duty, had relieved the other about half-past six o'clock in the evening, two men being employed in the day and

Appendix.

I.
Returns of
Accidents.

Hull and Selby.

night duty, which was taken by each in alternate weeks; and the men are always most strictly enjoined to be attentive in discharging their duties. These facts came out at the Inquest held yesterday, when a verdict of "Accidental Death" was returned. One of the jurymen came from Selby to Brough by the train; he said he was rather timid, and noticed the very great care and attention which the engine-driver appeared to pay to his duties during the journey; and he also heard the squeaking noise referred to by Howard; the whistling was heard by him and also by others of the jury. I feel pleasure in stating, that not a more sober, steady, and attentive man than Howard is, can, in my opinion, be placed upon an engine, and he has been with us since the line was opened in July, 1840.

Although the poor man was killed owing solely to his own neglect of duty, it is another proof of the desirableness of having gates in such situations to shut *upon the road* and *not on the railway*.

I am, &c.

G. R. Porter, Esq.
&c. &c. &c.

GEORGE LOCKING, Secretary.

Liverpool and
Manchester.

LIVERPOOL AND MANCHESTER RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Particulars.
1841. Oct. 14.	Robert Murchison.	Labourer, in the service of Messrs. E. and W. Hunter, quarrymen.	Killed.	In the act of crossing from the north to the south side of the railway at Huyton Quarry, was knocked down by the 9 A.M. (first class) train from Manchester to Liverpool, and the whole train passed over his body.

H. BOOTH.

Ulster.

ULSTER RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Oct. 11.	Hugh Kidd.	Passenger.	A severe contusion of the abdomen, and one leg severely fractured.	The deceased climbed over the carriage-door (which was locked as usual) for the purpose of getting out of the train whilst in motion; and his clothes having caught on the carriage, he fell, and received the injuries mentioned.	Omitting to leave the carriage whilst stopping at the Dunmurry station; and when he found the train in motion, thought he could safely get out.	A report of the inquiry at the inquest will be forwarded to-morrow.

Ulster Railway Office, Belfast, 13th Oct. 1841.

J. G. SMITH, Secretary.

Dundee and
Arbroath.

DUNDEE AND ARBROATH RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Oct. 11.	Margaret Steven.	Aged 73 years; height, 5 feet 3 inches; deaf, imbecile.	Fracture of the right clavicle, with severe contusion of the right elbow.	Attempting to cross the railway in front of the mail train at a foot crossing in a curve. The engine in coming up struck the deceased on the right shoulder, and killed her on the spot.	The individual attempting to cross the line of railway at a foot crossing when the train was at a short distance, and in a curve. Deceased being deaf, did not hear the alarm whistle, although sounded 100 yards before reaching her, and steam off, engine reversed, and every attempt made to bring up the train.	The deceased has frequently been snatched from the front of an approaching train; has been remonstrated with by the Company's servants, and promised never to come upon the line. Latterly a female has been in charge of the deceased to keep her off the line, but neglected her charge. Having no coroner's inquest in Scotland, the accident is under the investigation of the procurator fiscal of the county, and he is proceeding with his recognitions.

ROBERT MARSHALL, Manager.

STOCKTON AND DARLINGTON RAILWAY.

Darlington, October 13, 1841.

RACHAEL WALTON, aged 66, and wife of Ralph Walton (very deaf), belonging to Lyne-sack and Softly, did wilfully trespass on the Hagger-leases Branch of the Stockton and Darlington Railway, between Storey Lodge Quarry and Evenwood Gates; about nine o'clock, A.M., two waggons laden with stones, in charge of John Jennesson, employed by the Durham County Coal Company, who endeavoured by shouting aloud to give her the best possible intimation of her danger, were descending by gravitation at the rate of seven or eight miles per hour; she was in the act of crossing from one side to the other; the first waggon knocked her down, and one of the wheels passed over her right foot and crushed it so severely, that her toes were obliged to be amputated. Mr. Todd, the surgeon of Evenwood, and two other medical men were in attendance, but little hope is entertained of her recovery. It is expected that amputation above the ankle will at least have to be performed.

Signed by order of the Committee of Management,

SAMUEL BARNARD, Secretary.

Appendix.

I.

Returns of
Accidents.Stockton and
Darlington.

SOUTH WESTERN RAILWAY.

South Western.

Return of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.
1841. Oct. 16.	James Harrison.	Second guard of mail train, in the service of the Company.	Slight cut over eye.	Collision of mail train with goods waggons left on line by the luggage train, one engine having been disabled.	Non-observance of signals by the engine-driver and fireman of the mail train up.

18th Oct. 1841.

ALFRED MORGAN, Secretary.

MIDLAND COUNTIES RAILWAY.

Midland Counties.

Return of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Oct. 17.	William Hufton.	Killed.	Ran in front of engine.	Trespassing on the line at 4 o'clock in the morning, supposed not to be sober.	Verdict of the jury, Accidental Death. No blame attached to any one.

J. F. BELL, Secretary.

ST. HELEN'S AND RUNCORN GAP RAILWAY.

St. Helen's and
Runcorn Gap.

Return of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Cause of Accident.
1841. Oct. 19.	John Baxter.	Horse driver in the employ of the St. Helen's Railway Company.	Killed.	He coupled the horse to the draw bar instead of the side chain, and became entangled.

21st Oct. 1841.

At an Inquest held on the 20th day of October, 1841, upon the body of John Baxter, late employed by the St. Helens and Runcorn Gap Railway Company:—

John Birch, sawyer, St. Helen's, in the employ of Messrs. Tickle and Webster, builders, deposed, that he the said John Birch was at the St. Helen's and Runcorn Gap Railway Station, assisting in the discharge of timber for his employers; saw the deceased John Baxter hook his horse to the middle draw-bar of a waggon which he was in the act of shunting; he drew the waggon up to another, and called to the horse, who turned properly, and the deceased was caught between the two waggons and crushed in the chest.

I think the deceased acted improperly in hooking to the middle instead of the side of the waggon, as I had always seen the horses hooked to the side-chains previously.

Another witness, whose name was not taken by the coroner, corroborated the above evidence.

Verdict; "Accidental Death." Deodand of 5s. upon the waggon.

JOHN WOLFENDEN, Agent.

F

Appendix.

I.
Returns of
Accidents.Glasgow, Paisley,
and Greenock.

GLASGOW, PAISLEY, AND GREENOCK RAILWAY.

SIR,

Bishopton, 19th October, 1841

THE old woman killed to-day by the twelve o'clock down-train was a stranger; it appears she got up somewhere on Westferry Bank, near to Kings Bridge from the turnpike road, which there runs parallel with the line; she intended, it is supposed, to cross the railway for the purpose of gathering blackberries on the other side of the line, which along the south side of Westferry embankment is skirted by fields and wood.

John Wilson, the supernumerary in charge of this beat, had but a short time before gone over it carefully, and finding all right went further on towards Woodside Rock, the end of his beat. There are also a number of plate-layers at work there who passed up at twelve to dinner, and she was not on the line then, nor till twenty minutes past twelve.

She called at Robert Stewart's farm-house near Westferry, and got some bread and milk after twelve, so that she must have watched till all our men passed, and then got on the bank just as the train emerged from the rock. Meantime, according to Mr. Ross's orders, I have suspended Wilson till your commands reach me.

I am, &c.,

P. CROSLY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Oct. 19.	A stranger. All that can be learned is that she is called the "Widow" Carn Duff. She went also by the name of Lillias Ferguson, or Duff.	A mendicant, 70 years old.	Struck by the engine, and killed on the spot.	No accident to the train. It occurred solely from the woman trespassing on the line; and every exertion was made by the engineman and guards the moment she was seen. The breaks were applied, the whistle sounded, and the engine reversed; and the train stopped a few yards past the spot.	From the woman coming in front of the engine.	This woman, it is stated, was forcibly ejected from the line, together with others, by Stewart Govan, policeman, at Luggie Hole, early in the morning; and appears to have watched her opportunity to trespass again during the dinner hour. She was from Paisley, where the poor are much distressed, and wandering over the country begging.

21st Oct. 1841.

J. E. ERRINGTON, Secretary.

Manchester and
Leeds.

MANCHESTER AND LEEDS RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Oct. 22.	William Naylor.	Servant of the Company in the capacity of labourer.	Killed on the spot.	Run over by a train of empty ballast waggons.	Carelessness.	Fell off an empty waggon on to the rails, and the following waggons passed over his body.

25th Oct. 1841.

W. ROBINSON.

Midland Counties.

MIDLAND COUNTIES RAILWAY.

SIR,

Leicester, 25th October, 1841.

AT Loughborough (where every train stops) and near to the station, there is a ballast-pit, into which is a siding with self-acting points.

On the 25th ultimo, the 4.45, P.M. train, from Derby, was pulling up for stopping, when the driver saw the points were wrong; he instantly put on his break and reversed the engine.

The engine and all the carriages ran into the siding where were several empty ballast-waggon standing; the waggons were driven off the rails, and there being a sharp curve in the siding, the engine went off and thus stopped the train. No one was in the slightest degree hurt. No carriage was either thrown off the rails, nor in the least degree damaged.

The pilot-engine brought the train forward, and the damaged engine was at work again in a few days.

An inquiry was immediately made, and it appeared that the policemen in charge of the points had neglected his duty, in having failed to see to them previously to the train coming.

The Directors gave instructions for a warrant to be taken out against the policeman (who I think it right to state had previously most faithfully done his duty), but he has absconded, and has not since been heard of.

I annex the instructions which had been given to the policeman at Loughborough.

No one having suffered the smallest injury I was not instructed to report the case.

I remain, &c.

S. Laing, Esq.
&c. &c.

J. F. BELL, Secretary.

(Copy)

POLICE DEPARTMENT.

Memorandum, 19th day of July, 1841.

The police constable at Loughborough station will pay particular attention to the points placed at the ballast-pit, seeing that they are made perfectly secure as short a time as possible previous to any train passing over them.

(Signed) J. WITHERS, Inspector of Police.

STOCKTON AND DARLINGTON RAILWAY.

Stockton and
Darlington.

SIR,

Darlington, October 26, 1841.

I BEG to hand you the statement subjoined of an accident upon the Stockton and Darlington Railway, which I am happy to think is not likely to be attended with fatal consequences, though severe to the sufferer.

I beg to remain, &c.

JOHN R. ORD, Secretary, *pro tem.*

On Monday morning the 25th instant Absalom Barton, night watchman at the Darlington station on the Stockton and Darlington Railway, having completed his watch, leaped into the train when proceeding westward, at ten minutes to nine o'clock, without permission, and in defiance of the regulations of the Company; his object being to transact some private business, at St. Andrew's Auckland. On the arrival of the train within half a mile of the Shildon Station being desirous of taking the nearest route across the country, he suddenly leaped from the coach, the engine being at the time at the moderate speed of twelve miles per hour, as approaching said station: the step of the last coach caught him as he rebounded from the ground, turned him round; the step beyond also caught him and threw him with great violence against the step or other part of the coach. His right leg was fractured, and his head received considerable injury on the skull and jaw-bone. Medical assistance was procured; two surgeons, Mr. Clark, of Bishop Auckland, and Mr. Anderson of the same place, have continued in attendance upon him, and at present expect to be able to reduce the fractured limb, and think favourably of the case generally.

The sufferer is quite sensible, and reflects with sorrow upon his own rash conduct, blaming himself alone.

NORTH UNION RAILWAY.

North Union.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Cause of Accident.	Remarks.
1841. Oct. 22.	Richard Carr.	A farmer, not a servant of the Company.	Broken arm.	Knocked down by a carrier's train. It appears he wished to go by the train to Lancaster after the gates were closed, and that he ran round by Charles Street and climbed over the fence walls. In descending he fell against the coming-up carrier's train, and received the injury.	The surgeon reports the patient is doing well.

Preston, 27th Oct., 1841.

JAMES CHAPMAN, Secretary.

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Appendix.

I.
Returns of
Accidents.

Midland Counties.

Appendix.

I.
Returns of
Accidents.Manchester and
Leeds.

MANCHESTER AND LEEDS RAILWAY.

Return of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Oct. 27.	Sam. Hargreaves.	Passenger.	A severe shake.	The door of a hind class carriage came unfastened, and he leaning against it at the time fell out, and rolled down the embankment at or near Smithy Lane.	Thoughtlessness, as he had been shaking the door.	He appeared to be in liquor at the time. On being brought to this station he was conveyed to the Royal Infirmary, where he remains

Manchester Station, 27th Oct., 1841.

W. ROBINSON.

Newcastle-upon-
Tyne and Carlisle.

NEWCASTLE-UPON-TYNE AND CARLISLE RAILWAY,

Return of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Oct. 27.	Thomas Wilson.	Servant of the Company.	Bruise in the breast, of which he died an hour afterwards at his own house.	An engine and tender going down the line, one of the gates not opened in time, and the man hit by the engine.	Opening a gate for engine and tender to pass through.	Inquest held 29th verdict "Accidental Death," deodand, 5 <i>l</i> , upon the engine.

29th Oct. 1841.

JOHN ADAMSON, Clerk to the Company.

London and
Blackwall.

LONDON AND BLACKWALL RAILWAY.

Return of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Oct. 28.	Patrick Camady.	Labourer in the employ of Messrs. Grissell and Peto, contractors, executing work for the Company.	Compound fracture of the thigh, and severe laceration of the head.	Struck by the down train from Shadwell to Blackwall.	Incautiously standing on the line of road, although repeatedly warned of the consequences.	Removed to the London Hospital, where he remains in a very precarious state.

J. WARMINGTON, Secretary.

Grand Junction.

GRAND JUNCTION RAILWAY.

Return of Accident occurring in the course of public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Cause of Accident.	Remarks.
1841. Oct. 27.	Thomas Philips.	Passenger.	One leg broken and knee dislocated.	Attempting to get on a train while in motion.	This gentleman did not pay attention to the bell for passengers to take their seats, he was absent from the platform at the time, and after the usual time of two minutes, the conductor passed down the

train and proceeded to ring the second bell for starting the engine, the train had not proceeded ten paces when a cry was heard, and Mr. Philips was discovered clinging to the step of the carriage with both hands: he was instantly placed on the platform, carried into the waiting room, and a surgeon sent for; he never spoke, and died in 20 minutes.

The inquest was held yesterday, and the verdict returned is "Accidental Death." No deodand was levied on the carriage, and no blame was imputed to any of the Company's servants; it appeared by the surgeon's evidence that the wheel did not pass over his leg, and that the injury must have been caused by the step of the carriage; it was nearly dark at the time.

MARK HUISE, Secretary.

GRAND JUNCTION RAILWAY.

Return of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Cause of Accident.	Remarks.
1841. Oct. 28.	William Lowe.	Passenger.	Head crushed with wheel of carriage.	Attempting to jump off a train while in motion.	This casualty is similar in character to the one before reported, excepting that the passenger was attempting to leave a carriage. On arrival at Crewe, and before the train was completely stopped, he

opened the door and attempted to spring on the platform; he miscalculated the distance, and appears to have fallen backward on the rail, the train then proceeding so slowly that the Porter who saw him fall under the wheel, and heard it go over him, was enabled to stop the train before the second wheel of the same carriage reached the body. The verdict of the jury in the Inquest held yesterday was Accidental Death—the Coroner remarking that no one but the passenger was to blame.

MARK HUISH, Secretary.

Appendix.

I.
Returns of
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Grand Junction.

EDINBURGH AND DALKEITH RAILWAY.

Return of Accident.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Nov. 6.	Bentley Johnston.	A child of three years old, son of the principal waggon driver in St. Leonard's depôt.	Instant death.	He was struck by the end of a waggon and thrown across the railway, so that one of the wheels came upon his chest and stood fast upon it.	The waggon was standing still on a siding in St. Leonard's depôt, near to his father's house; and he was passing the waggon, in the act of following his father, at the instant when a train of waggons was drawn forward to the same place on the same siding, so as to strike slightly against the former waggon and cause it to move against the child.	No blame attaches to any one. The child was within a few yards of both his father and his mother, having run from the side of the latter after the former.

D. RANKINE, Manager.

Edinburgh and
Dalkeith.

PRESTON AND WYRE RAILWAY.

Preston and Wyre.

SIR,

Fleetwood, 11th November, 1841.

I LAMENT to have to communicate to you that an accident happened upon this railway on Saturday evening last, which has since terminated fatally, although I have the consolation to add that no blame can attach to any one, but to the unfortunate victim himself.

Thomas Hornby of this place was returning from Preston by the train which leaves there at half-past five in the evening; and when it stopped to put down passengers at the Lea road. (three miles from Preston,) he had the imprudence to get out of the third-class carriage, where he had been riding, and to go into a waggon at the back of the train, which being separated from the carriages by six or seven horse-boxes, carriage-trucks, and waggons, and the evening being very dark, he was not observed by the guard or any one else in doing. He had two small pigs in a crate in this waggon, and his motive for getting into the waggon was lest they should attempt to get out. The waggon being without high sides (the sides were about twenty inches high), he overbalanced himself while standing near the end, in consequence of the slight shake occasioned by the shutting off of the steam when approaching the Poulton Station, and the one or two vehicles behind the waggon in which he had been riding, ran over his legs. This was not observed, and he lay there until a short time after, when the people of the station, who were pushing some carriages in that direction, heard his moans, and conveyed him to an inn opposite the station, and immediately procured medical assistance. One of his feet was found very much crushed, and the other leg was fractured in two places. On Sunday (when he was a little recovered from the shock to the system) the foot was amputated, but he died soon after. An Inquest has since been held, when the before-mentioned circumstances were proved (having been chiefly related by himself to the surgeons and others who attended him), and the Coroner and Jury were unanimous in the opinion that no blame whatever was attributable to any one but to the poor fellow himself, and a verdict of "Accidental Death" was returned. No one is allowed to ride in any but high-sided waggons (breast high) and then only the owners or drovers to look after the cattle, pigs, &c., which sometimes endeavour to get out.

I am, &c.,

S. Laing, Esq.
&c. &c.

JOHN POWER, Secretary.

Appendix.

I.
Returns of
Accidents.London and
Croydon.

LONDON AND CROYDON RAILWAY.

Sir,

205, Toteley Street, 16th November, 1841.

It becomes my most painful duty to report to you, a very serious, and I fear in its results, fatal accident, which occurred to a porter named William Martin, in the employ of the London and Croydon Railway Company, at about half-past nine o'clock this morning.

I am informed that the man had passed up the inclined plane on a Brighton train, to the spot where the late slip impedes the further advance of the trains; and the passengers having alighted and walked up the bank, the train was returning to New Cross, when the down train to Croydon appearing in sight; the signal of "danger" was displayed by the police constable on duty. Immediately afterwards Martin was seen making his way from the top of one carriage to that of another, at the moment the train was passing under the bridge, which struck him on the head, and knocked him under the carriages.

He was immediately taken to Guy's Hospital, where it was discovered that he had sustained a severe fracture of the skull, and of both arms; and the surgeons are of opinion that he cannot recover.

I have, &c.

G. R. Porter, Esq.
&c. &c. &c.

R. G. Young, Secretary.

London and
South Western.

LONDON AND SOUTH WESTERN RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Names of Persons Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Nov. 17.	Mr. John Bida. Thomas Duncan. Thomas Rolfe.	Passenger. Ditto. Guard.	Cut on forehead and on the chin. Sprained knee. Cut on chin.	Collision.	By a ballast engine belonging to the contractor for maintaining the road, travelling on the wrong line, and neglect of sending signals a sufficient distance a-head, both being in violation of rules and orders, which all the contractors' servants receive direct from the Company.	Neither of the gentlemen are likely to be long kept from their avocations, and the Company's servant is again at work.

Nov. 19, 1841.

ALFRED MORGAN, Secretary to the said Company.

Manchester and
Leeds.

MANCHESTER AND LEEDS RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Names of Persons Injured.	Description.	Nature of Injury.*	Nature of Accident.	Cause of Accident.	Remarks.
1841. Nov. 28.	James Shaw. Joseph Sutcliffe.	Labourer in the employ of the contractor on the line. Ditto	Broken thigh and compound fracture on the back of the head. Dangerously injured.	Platelayer's Lorry, on which they were going to Sowerby, smashed by a luggage train.	Recklessness by proceeding on a Lorry at the time of a luggage train being due, in defiance of the remonstrances of the watchman.	The men were drunk and did forcibly persist in going, although the watchman warned them of the probable consequences.

WILLIAM ROBINSON.

* Whether the nature of the injury, as given above, applies to James Shaw or Joseph Sutcliffe it is impossible for me to say, as it is not properly set forth in the accompanying Report.

Copy of Report received from our Clerk at Sowerby Bridge.

Sir,

Sowerby Bridge Station, 29th November, 1841.

I BEG leave to report an accident that occurred about half-past ten o'clock last night, at Boy Mill Bridge, about 250 yards on this side of Suddendenfoot. It appears four men forcibly, and in opposition to the advice of the watchman at Suddendenfoot, took one of the platelayers' trucks to proceed to Sowerby Bridge. They had not got more than 200 yards when they

perceived the luggage-train from Manchester approaching; and before they could get the truck clear of the line the engine struck it and smashed it to pieces. Two of the men we have got in custody, and one lays at the Red Lion Inn, Suddendenfoot, dangerously injured, his thigh-bone being broken, and he having received a compound fracture in the back of the head. The other man made his escape, but has since been traced to his residence at Halifax, where he remains very seriously hurt. The two men injured, and one of those in custody are labourers, in the employ of Heslop, the contractor: the other man is a toll-house keeper; all of them were drunk.

James Shaw, dangerously hurt.
Joseph Sutcliffe, ditto.
George Carter, uninjured.
William Mitchell, ditto.

I am, &c.

Captain Laws, R.N.

GEORGE RICHARDSON, Clerk in Charge.

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I.
Returns of
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Manchester and
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CLARENCE RAILWAY.

Clarence.

RETURN of an Accident.

Date.	Name of Person Injured.	Description.	Cause of Accident.	Nature of Injury.
1841. Nov. 27.	Thomas Tate.	Fireman of a coal-engine.	The ground being frozen and covered with ice he slipped down in getting off the tender, and his right arm went under the engine wheels.	Right arm amputated. The man is doing well.

Clarence Railway Office, Stockton,
Nov. 29, 1841.

SIR,

ABOVE I beg to hand you a report of an accident that befel one of the firemen on this line; it was entirely accidental. I am glad to say the poor fellow is doing very well.

I am, &c.

G. R. Porter, Esq.
&c. &c. &c.

GEORGE CHILD, Superintendent.

LIVERPOOL AND MANCHESTER RAILWAY.

Liverpool and
Manchester.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Cause of Accident.	Remarks.
1841. Dec. 4.	Mrs. Bowker.	Passenger, and mother of one of the Company's policemen.	One leg broken and otherwise bruised.	She had gone from Manchester to Patricroft, by the 11½ train, and on its starting again (from the Patricroft Station), was about to cross the north line of rails, and when the 11 A.M. train from Liverpool was seen approaching. The policeman observed her, and called to her, but in vain: he then ran towards her, and reached her just as she was knocked down.	She was immediately conveyed to Manchester, and taken to a medical man, who has set her leg.

H. BOOTH.

MANCHESTER AND LEEDS RAILWAY.

Manchester and
Leeds.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Dec. 4.	James Furber.	Luggage guard.	Crushed.	Unshackling, and caught between two buffers.	Carelessness.	Had no business to go while the waggon or waggons were in motion.

Superintendent's Office, 8th Dec. 1841.

WM. ROBINSON.

Surgeon's Account, received this morning only, 8th December, 1841.

I WAS sent for a little after five o'clock on Saturday evening, December 4, 1841, to see James Furber, a luggage-guard. I immediately went and found him at his own

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I.
Returns of
Accidents.
—
Manchester and
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house, No. 9, Rome-street, having been crushed between the buffers of some loaded waggons on the line. He was very much collapsed when I first saw him, and almost pulseless. I apprehended some serious internal injury. He complained of much pain in his back, which, on examination, I found some little contused. This was the only external mark of injury. When he rallied I had him cupped in the back, which afforded him much relief; and administered what I considered appropriate remedies. He soon began to vomit a dark grumous-looking fluid, which was blood mixed with the contents of the stomach, which continued the whole of Sunday, and I began to fear he would sink rapidly. Medicines, however, had a beneficial effect, and corrected the bleeding, and to-day I entertain hopes of his recovery.

(Signed) WILLIAM SMITH, surgeon.

Bolton and Leigh.

BOLTON AND LEIGH RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Dec. 7.	Christopher Iuce.	Breaksman upon the Bolton inclined plane.	Hand crushed.	Caught between the buffers of two waggons.	In pinning down a break, he placed one hand upon the buffer, which, coming in contact with another waggon, crushed it.	The man is expected to resume his work in a short time.

Bolton, 8th Dec. 1841.

HENRY BRADSHAW, Principal Clerk to John Hargreaves, Jun. Esq. the Lessee of the said Railway.

Dundee and
Arbroath.

DUNDEE AND ARBROATH RAILWAY.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Cause of Accident.	Remarks.
1841. Dec. 6.	Alexander Reid.	Porter at the Trades Lane station of the Dundee and Arbroath Railway. Age, 41; height, 5ft. 5 in.	Simple fracture of the right thigh bone, and compound fracture of the bones immediately above the ancle.	When shifting a train of goods waggons from one line of rails to another, Reid, having placed himself on the buffer of the first waggon, in leaping off, missed his footing and fell in front of them, when the first waggon, being empty, passed over his legs.	It is contrary to the Company's regulations for any servant to place himself in such a situation as Reid did on this occasion, and it is presumed that had he attended properly to his instructions, no accident could have occurred.

Dundee and Arbroath Railway Company's Office, Dundee,
9th Dec. 1841.

ROBT. MARSHALL, Manager.

Eastern Counties.

EASTERN COUNTIES RAILWAY.

Return of Accident on the Works.

Date.	Names of Persons Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Dec. 11.	John Vinall . . .	Bricklayer . . .	Face cut and arm bruised.	Fall of centres and rings of arch.	Rings of the arch of the bridge of the river Blackwater falling at Kelvedon, with its centres, caused by the contractor carrying up the brickwork of one of the arches contrary to orders.	The men are attended by Messrs. Varenne and Patmore, surgeons, Kelvedon, and are all doing well.
	David Waight . .	Ditto	Leg cut.			
	William Bishop . .	Labourer . . .	Stunned by fall.			
	William Bonner .	Ditto	Knees hurt and cut face.			
	William Oldin . .	Ditto	Leg cut and bruised.			
	Stephen Davey . .	Bricklayer . . .	Face cut.			
	Thomas Parria . .	Ditto	Internal bruise.			
	Thomas Nightingale	Ditto	Knee and thigh cut.			
	Charles Sawyer . .	Ditto	Bruised.			
	Joseph Jackson . .	Builder	Leg cut and bruised.			
		(All in the contractor's employ.)				

Eastern Counties Railway Office, High Street, Shoreditch,
December 14, 1841.

ANTHONY BULKELEY.

DURHAM AND SUNDERLAND RAILWAY.

Appendix.

I.
Returns of
Accidents.Durham and
Sunderland.

MY LORDS,

Sunderland, 15th December, 1841.

I HAVE to inform your lordships of an accident that took place on the line of the Durham and Sunderland Railway, on Monday morning last, the 13th instant. The circumstances under which it occurred are these:—A boy, named Robert Hodgson, of this town, serving his apprenticeship as a butcher, at Ryhope, having to go to Elemore, about six miles from the latter place, in order to get there sooner, asked the waggonman, who was going to start up the incline plane to Seaton, if he might ride on the waggons, as it would have been some time before he could have got by the coach, to which he consented, (though contrary to the orders of the Directors), and he got on to the last coal waggon in the train: that after riding about a mile, it is supposed that in attempting to jump off (for the waggonman did not see him do so) he had fallen to the ground, whereby his thigh bone was broken. He is now under medical treatment, and I trust will do well.

In corroboration of the above I beg to hand your lordships a copy of a note received from the boy's master, by which you will perceive that the boy was to blame in attempting to get off the waggon, and by doing so got his misfortune.

I have the honour, &c.,

M. COXON, Secretary.

To the Lords of the Committee of the Board of Trade,
Railway Department.

Copy of Note from the Boy's Master.

SIR,

Ryhope, 15th December, 1841.

This is to certify, that Robert Hodgson, son of — Hodgson, of the Low-street, Sunderland (late a butcher in the neighbourhood of Bishop Auckland) has been between six and seven weeks with me assisting me in my business as a butcher. I left home on Monday morning, requesting him to follow me to Elemore to bring back some stock that I went to purchase; he, to get soon there, did not wait for a coach, but attempted to leap on to the waggons, when he laid himself on the sole end until he was tired, when attempting to get off he was caught by the horse crook and dragged until his trowsers gave way, when he fell and broke his thigh bone.

I am, &c.,

Mr. Coxon, Railway Office, Sunderland.

J. GARTHWAITE.

GREAT NORTH OF ENGLAND RAILWAY.

Great North of
England.

RETURN of Accident in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Dec. 10.	Thomas Shipley.	A platelayer. Company's servant.	Bones of foot and ankle both broken.	Two waggons laden with ballast pass- ing over it.	His foot having got fast between two rails. A horse was drawing the waggons, and the man's foot caught in the check rail and he fell.	He died on the evening of the 14th inst., in- flammation having taken place. Coroner's Inquest held on the 16th. Jury returned a verdict of Accidental Death. No deodand.

WM. O'BRIEN, Superintendant.

BALLOCHNEY RAILWAY.

Ballochney.

SIR,

36, Miller-street, Glasgow, 16th December, 1841.

I AM sorry to be obliged to inform you of a serious accident which happened to one of the servants of the Company on the night of Saturday last, the 11th instant, while engaged in the performance of his duty. His name is James Muir, and he appears, as you will see by the enclosed report of the superintendent, to have been at work on the incline when one or two of the waggons passed over his hand and leg, and both were thereby severely injured.

I have the honour, &c.

S. Laing, Esq.,
&c. &c.

JAMES MITCHELL.

G

Appendix.

I. Returns of Accidents.

Ballochnev.

RETURN of an Accident.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.
1841. Dec. 11.	Hugh Muir, residing at Rawyards.	Servant of the Company.	His right hand so much injured, that there is a doubt of it being saved, the finger and thumb is cut off. His leg (right) is very much bruised, but no fear of amputation being necessary.	One or two waggons went over Muir's hand and leg.	Muir was taking the side chains from the empty waggons which had just arrived at the top of the inclines, and while doing so (the night being very dark and stormy) the loaded waggons slipped past the chain before he could get it attached; seeing this, with great presence of mind, he ran to close a switch to prevent the waggon running down the inclines, but while doing so the waggons ran over his hand and leg.

W. DODDS, Superintendent.

**London and
Croydon.**

LONDON AND CROYDON RAILWAY.

SIR,

205, Tooley-street, 18th December, 1841.

I REGRET to have to inform you that an accident occurred yesterday evening on this line, from a ballast engine, belonging to the Brighton Railway, in the employ of this Company, coming in contact with a Croydon train.

I am not able at present to give the details of the consequences which have ensued, further than to say, that about eight persons have received contusions or wounds, but no life has been lost, nor any limb broken.

I have the honour, &c..

G. R. Porter. Esq.,
&c. &c. &c.

R. S. YOUNG, Secretary.

SIR,

205, Tooley Street, 22nd December, 1841.

THE following are the facts of the accident that took place on Friday afternoon on this railway, which, I may be permitted to observe, were not before communicated on account of the case having been remanded by the magistrate at Greenwich, until Thursday next, when two points of importance in the case will have to be investigated.

A down train from London to Croydon started from London just before half-past five, and reached the Sydenham station in safety.—The Sydenham passengers having alighted, the train was starting again, and when just in motion, an engine ran into the back of the train, severely bruising or stunning several of the passengers, and straining the buffing springs of most of the carriages, breaking the framings or the bodies of the last two, and one of the axles of a truck which was in the rear.

As far as could be ascertained, the following are the names of the parties injured:—Mr. Goddard, Beckenham; Mr. Desborough of the same place; Mr. Boyd, Norwood; and a female living at Shirley (name unknown); and Mr. George Colson, Penge; were bruised or cut in the knees or shins:—a Mrs. Allen, Croydon; Mr. Thomas Colson, jun., Penge; and two labourers, one named Wood, cut or bruised in the head or face:—a gentleman (name unknown) living at Broad Green; Houghton, acting as one of the guards of the train; Miss Mary Colson, Penge; and a labourer named Best, at Croydon; stunned or shaken internally—the last named party is most hurt, nearly all of the others being now engaged in their customary avocations.

The engine and driver which caused the accident, had been lent by the Brighton Railway Company, and had been employed in the removal of earth; they had, however, left work, and gone to Croydon about an hour previous to the accident, and the engine-man had run upon the Croydon line again without having any business, in order to avoid a Brighton up-train, which overtook him while he was running water into his boiler; he ran on to the Dartmouth Arms Station to change his engine on to the down-line, and must have met the train into which he ran, just after it had left that station. Mr. Rallett, chief superintendent of the London and Brighton Railway, was on the engine of the train, and believing the engine-man, Charles Goldsmith to be in liquor, he ordered him into custody, and he was taken before the Croydon magistrates on Saturday morning, and by them referred to Greenwich, where the case was heard before Mr. Grove; Charles Goldsmith being charged by Mr. James Rallett, with being drunk, and wilfully running into the Croydon train. This witness deposed that he was on the engine of the train, and feeling a sudden concussion he got down to discover the cause, when

he saw that another engine had run into the train ; the engine-man, whom he perceived was in liquor, he gave into custody.

James Davenport, the railway constable in whose custody he was, could not say that the prisoner was drunk, he walked with him to the next station ; he was confused at first but he believed him to be sober. Jeremiah Braybrook, the guard of the train, proved that the red tail-lamp was behind the train, and immediately after the accident he removed it, to use it as a light.

The prisoner denied that he was drunk, and stated that he could not see the red-light in consequence of a man standing up in the truck attached to the last carriage, who obstructed the signal. The evidence of the stoker went to the same effect.

William Adams, a ganger of labourers to the London and Croydon Railway, who had been sent with the truck from the Dartmouth Arms Station, swore that he was sitting and not standing when the collision took place, he had not observed the red-lamp, whose place was some distance higher than his head.

Mr. Seaman, superintendant of the railway police, had the truck attached at the Dartmouth Arms Station, and sent Adams in charge of it. At the time the train started from that station, Adams was sitting on the side of the truck, and the red-light distinctly visible.

Mr. Grove remanded the case until Thursday next, in order to obtain additional evidence as to the sobriety of the prisoner, and the fact of the red-light being visible at the time of the accident.

Every attention was paid to the passengers, by providing those that were at all injured with conveyances, and ordering medical attendance.

I have, &c.

S. Laing, Esq.
&c. &c.

R. S. YOUNG, Secretary.

Appendix.
I.
Returns of
Accidents.
London and
Croydon.

LIVERPOOL AND MANCHESTER RAILWAY.

Liverpool and
Manchester.

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Particulars.	Remarks.
1841. Dec. 21.	Peter Taylor.	A boy about 11 or 12 years old, neither passenger or servant of the Company.	Killed.	He had come on the railway at Newton Junction over a stile for foot passengers, and was crossing the road immediately after the last waggon of a goods train from Manchester had passed, and was struck down and killed by the 4½ p.m. first class train from Liverpool, which came up at the same moment in the the opposite direction, and on the other line.	There were two boys, but one escaped unhurt. They work in the neighbourhood. It was about 5.30 p.m. when it happened.

HENRY BOOTH.

GREAT WESTERN RAILWAY.

Great Western.

SIR, London Terminus, Paddington, 22nd December, 1841.

It becomes my duty to report to you, for the information of the Lords of the Committee of Privy Council for Trade, that a third-class passenger by a luggage-train, named John Edwards, a stonemason and bricklayer by trade, met with a severe accident on the starting of the train, at an early hour this morning, from the Shrivenham Station.

It would appear that he had got upon the seat of the truck, on which he had been seated, and was jumping up and down, as is stated, to warm his feet, at the time at which the train was moving forward.

The jerk of the engine putting the train into motion, shook him off the seat on which he was standing, and by the fall between the passenger truck and waggon, he unfortunately broke both his arms, and was otherwise injured.

He was instantly removed on the engine to Swindon, where every attention is paid to his case.

I have, &c.

S. Laing, Esq.
&c. &c.

CHARLES A. SAUNDERS, Secretary.

Appendix.

I.
Returns of
Accidents.

Bolton and Leigh.

BOLTON AND LEIGH RAILWAY,

RETURN of Accident occurring in the course of the public traffic.

Date.	Name of Person Injured.	Description.	Nature of Injury.	Nature of Accident.	Cause of Accident.	Remarks.
1841. Dec. 21.	Thomas France.	Fireman to a locomotive engine.	Heel bruised and ligaments torn.	A waggon wheel ran over it.	Having to leave some waggons, from the middle of a train, at one of the stations, in coupling the waggons together again he by some means got his foot under one of the wheels.	It will probably be two or three weeks before the man can resume his work, although the injuries are not very serious.

Bolton, December 22d, 1841.

HENRY BRADSHAW, Principal Clerk to John Hargraves, Jun. Esq.
the Lessee of the said Railway.

Great Western.

GREAT WESTERN RAILWAY.

SIR,

Princes Street, Bank, 24th December, 1841.

I HAVE the melancholy task of relating to you, for the information of the Lords of the Privy Council for Trade, the particulars of a most disastrous and fatal accident which occurred this morning to a luggage-train of this Company.

It had proceeded safely from Paddington as far as the Sonning Cutting, about thirty-three miles, when it met with a sudden obstruction from a slip of earth, which, according to the statement of some individuals present, was actually seen to fall while the train was passing the spot. The force of the obstruction instantly threw the engine and tender off the rails, and produced so violent a concussion as to lift or throw over each other the following five trucks and waggons.

I lament to say that of the passengers travelling by this train no fewer than eight were killed on the spot, and twelve others injured and conveyed to the Reading Hospital. It appears that two of the latter only are serious cases, and the others not likely to be attended with any danger to life.

Upon my arrival on the spot I found that a Coroner's Inquest had been summoned at three o'clock, and I felt it my duty to attend in order to afford every information on the subject, as well as to report to you the fullest details of the accident. It has not yet been possible to ascertain the names or identity of the unfortunate sufferers. They are all men, apparently from twenty-five to forty-five years of age, and of the labouring class. It appeared from the evidence that their deaths must have been instantaneous.

I received from a medical man at the latest moment of my quitting Reading, a satisfactory report of the passengers, whom he had just visited in the hospital. He expresses the hope that even the two most severe cases may not prove fatal; and he speaks with confidence that the others will all do well.

I beg to add that the Inquest, after receiving some evidence, adjourned until Monday morning, the 27th instant, then to proceed with the investigation of the cause of the accident.

I have, &c.

S. Laing, Esq.
&c. &c.

CHARLES A. SAUNDERS, Secretary.

Stockton and
Darlington.

STOCKTON AND DARLINGTON RAILWAY.

Darlington, 29th December. 1841

WILLIAM WILLYDY in the employ of Thomas Dennies of Chapel Row, brickmaker, when attempting to get upon a run of loaden waggons ascending the Black Boy incline plane, contrary to the regulations of the Company, got his foot fast in a switch, whereby he was thrown down and three waggons passed along the calf of his leg.

Mr. Fielding of Chapel Row, surgeon, says there are no bones broken, and reports that the case is favourable.

Signed by order of the Committee of Management,

SAMUEL BARNARD, Secretary.

II.—REPORTS ON ACCIDENTS.

No. 1.

GRAND JUNCTION RAILWAY.

REPORT of Lieutenant-Colonel Sir Frederic Smith, on the Accident which occurred on the 11th February, 1841.

MY LORDS,

Manchester, the 23d February, 1841.

IN consequence of your Lordships' instructions, I yesterday proceeded to Whitmore, on the line of the Grand Junction Railway, for the purpose of inquiring into the accident, attended with loss of life, which happened at that place on the 11th instant.

Captain Cleather, the Superintendent of this line, afforded me every facility for conducting the investigation, and I inclose his report of the accident.

It appears that at 11 h. 30 m. P.M., on the 10th instant, a luggage train from Manchester, destined for Birmingham, and drawn by the Wildfire engine, arrived at Warrington, and thence proceeded on the journey at 11 h. 50 m. And it also appears that two goods' trains from Liverpool reached Warrington at 12 h. 25 m. and at 12 h. 34 m. respectively. These two trains were formed into one, and left Warrington for Birmingham at 1 h. 30 m. A.M., drawn by the Briareus and Charon.

The train drawn by the Wildfire consisted of 22 waggons, and the double train consisted of 46 waggons. There was an interval of 1 hour and 40 minutes between the starting of these trains from Warrington, but owing, I presume, to the Wildfire being inferior to the other two engines, the double train gained so rapidly on the preceding one, that it arrived at Whitmore at only 13 minutes later, and indeed before the train drawn by the Wildfire had again started; in consequence of which a collision between the trains took place, causing the death of a person named James Neister, who was travelling in charge of some pigs.

About half a mile to the north of the Whitmore station is the top of the Madeley plane, and from that point the line falls at the rate of 1 in 390 to and beyond Whitmore.

The state of the rails on the morning in question is represented to have been very unfavourable for the trains, having been covered with a coat of ice.

I find that since the severe weather set in, towards the close of December, the Directors of the Grand Junction Railway have allowed to the drivers and firemen of each train, both by day and by night, a cup of coffee on reaching the Whitmore station; and it appears that in the day time the coffee is carried by the porters to these men, who are in consequence not under the necessity of leaving their engines; but at night the practice is for the drivers and firemen to go into the office for their refreshment. It was in doing this that Hurst, the driver of the Wildfire engine quitted his duty, which, according to the regulation, is never to be absent from his engine when on the line; and during this short absence the double train, drawn by the Briareus and Charon arrived, and ran into the train then standing at the Whitmore Station.

There is no doubt that the steam was shut off from the Charon at a quarter of a mile from the station, but it is not precisely ascertained at what point the steam of the leading engine, the Briareus, was shut off. The driver of the last named engine, Ireland, had been employed in this capacity on the Grand Junction line for several years, and was considered a tolerably steady man. However he must have been very neglectful on this occasion, for the curve of the rails, in approaching Whitmore, and the change from the ascent of the Madeley plane to the descending gradient of 1 in 390, must have clearly denoted to Ireland his precise position; and knowing as he did the icy state of the line, he ought to have shut off his steam much sooner than he did; the more especially as he was aware that the Manchester train was not far a-head of him. It is in evidence that he mentioned to the driver of the Charon that he believed this to be the case.

Under these circumstances it is obvious that the careless driving of Ireland was the chief cause of the accident, and that the secondary cause was the breach of the regulations committed by Hurst in leaving his engine. The latter will naturally justify his disobedience of a standing order by urging that he only followed the practice of all the night drivers and firemen, who are in the habit of going into the office for their coffee. But this plea is inadmissible, and both Hurst and Ireland appear to me to have been so culpable that I trust the displeasure of the Directors will be marked by their temporary suspension from their employment. I also consider the station clerk very blameable for allowing an engine driver to enter his office under *any pretence whatever*, while his engine was on the line, for this officer could not be ignorant of a regulation which Captain Cleather informed me had been promulgated to the servants of the Company, prohibiting the drivers from leaving their engines when on the line. I would recommend that the orders on this head should be issued in a more peremptory form, calling also upon all the officers and servants to report any disobedience of this important regulation, for this is nearly a similar case to the irregularity which led to the fatal collision at Harrow, and it is one that I think should never pass unpunished.

Appendix.

II.
Reports on
Accidents.

No. 1.
Grand Junction.

Appendix.

II.
Reports on
Accidents.No. 1.
Grand Junction.

A new and satisfactory system of night stationary signals is in process of gradual introduction under Captain Cleather's direction. It has been commenced at Warrington, and it has been extended up to the station adjoining Whitmore. Whitmore was therefore *not* provided with a stationary red signal lamp, by which the drivers of the Briareus and Charon could be warned of the Wildfire train being still at the station; but in so far as concerns the accident now under consideration this was but of little moment, since Ireland had to stop at Whitmore for water, and therefore his speed should have been slackened at an earlier period; for had the collision not taken place, there is no doubt that he would have overrun the station. It has been attempted to excuse Ireland by stating that in order to break the ice upon the rails, two pig waggons and one luggage waggon had been placed before his train, and that these might have so far obstructed his view as to prevent his seeing the tail lamp of the preceding train. This might have been valid had the collision taken place any where except at a station, at which Ireland had to stop; and it is obvious that he was either driving carelessly or without judgment.

Captain Cleather is very properly supplying every passenger carriage with a lamp on either side showing a white light to the front and a red light to the rear of the train. This plan, which also prevails on the Great Western Railway, is deserving of imitation, and I trust it will be extended, although perhaps in a limited degree, to luggage waggons.

To the Lords of the Committee of
Privy Council for Trade.

I have, &c.,
FREDERIC SMITH, Lt.-Col. R. E.
Inspector-General of Railways.

No. 2.
Midland Counties.

No. 2.

MIDLAND COUNTIES RAILWAY.

REPORT of Lieutenant-Colonel Sir Frederic Smith, on the Accident which happened on the 6th May, 1841.

SIR,

Board of Trade, Whitehall, 26th June, 1841.

PURSUANT to the instructions which I had the honour to receive from you, I have inquired into the circumstances connected with the accident that happened on the Midland Counties Railway on the 6th instant, by which a person of the name of Mr. Anthony Sewell met with his death.

It appears that the deceased and his son went to the Barrow Station at about half past 9 o'clock on the evening of the 6th May, for the purpose of joining the up train at that place, and to be conveyed to Syston.

The station house, as you will perceive by the accompanying plan, stands adjoining the down line, and therefore passengers wishing to proceed by the up-trains, have to cross over the rails.

This, although a very common arrangement on all lines, is an inconvenient, and, in some degree, a very dangerous one.

On the occasion now under consideration the deceased, and his son James Sewell, after paying their fares, were allowed to loiter on the wrong side of the line until the up-train was heard approaching, when Mr. Gibson, the Station Master, said to them "The train is coming, make haste to cross, for it will be here in a minute."

Mr. Gibson and Mr. James Sewell immediately passed over the rails to the platform of the up-line, but Mr. Anthony Sewell unfortunately continued a few seconds longer on the wrong side, and then on attempting to cross was struck by the engine, and was in consequence killed.

The verdict of the jury was accidental death, as they ascribed the accident entirely to the carelessness and wilfulness of the deceased.

There can be no question that the accident was attributable to these causes, but I think it behoves all Companies to afford the most effectual protection to their passengers that circumstances may permit, and there are few points more deserving the consideration of the managers of railways than to adopt such regulations as shall ensure safety to the passengers in crossing their rails; for neither the incautious, the ignorant, or the infirm, should be left to their own discretion in such an important point.

In my inspection of the Barrow Station, and my inquiries into this accident, I was accompanied by Mr. Yule, one of the Directors, and by Mr. Bell, the secretary to the Company, who afforded me every facility in my investigation. I suggested to them that when the up-trains appear coming round the curve, within a few hundred yards of the station, the gate of the paled fence which separates the station-house from the platform should be closed, and no person allowed to pass till the train is at rest. This regulation, which they most readily agreed to establish, will effectually prevent such accidents as the one under consideration; and it would be well if for a similar precaution, the plan of separating the platform from the station by an inclosure, such as that at Barrow, were generally followed at the stations of all Companies where the relative situation of the station-house and line of rails would permit.

The Right Hon. Henry Labouchere,
&c. &c. &c.

I have, &c.,
FREDERIC SMITH, Lt.-Col. R. E.
Inspector-General of Railways.

No. 3.

NEWCASTLE AND CARLISLE RAILWAY.

REPORT of Lieutenant-Colonel Sir Frederic Smith, on the Accident which happened on the 10th May, 1841.

SIR,

Board of Trade, Whitehall, 30th June, 1841.

On the 14th May a return was received in this office from Mr. John Adamson, the secretary to the Newcastle-upon-Tyne and Carlisle Railway Company, giving an account of an accident that occurred on the 10th May, by which a man-servant in the employ of Mr. Algood was injured.

From this return, it would appear that the truck on which Mr. Algood's carriage was fixed, with two other carriages, got off the line of rails, and Mr. Algood's servant lost his balance and fell from his seat. The cause assigned for this accident by Mr. Adamson, is that a bale or truss of goods having got disengaged from its lashings fell from the waggon and formed such an obstruction as to turn out of their course the carriages which were immediately behind the said waggon.

Pursuant to your general instructions, I have made the necessary inquiries into this case which from its nature might have been attended with serious consequences, and I have to make the following report.

The Newcastle and Carlisle Railway Company have, for the conveyance of goods, trucks, or waggons of various descriptions, some of them with frames, some with sunken bottoms, and some with flush, in which latter case the goods are secured entirely by lashings. The truck from which the bale or truss fell which caused the accident of the 10th of May was of the last description. Mr. Adamson informs me, in answer to my inquiries, that this truck or waggon was packed at Carlisle and was there properly secured by ropes and covered with a tarpauling.

Some of the articles which had there been placed upon it were taken off at the Hayden Bridge Station, and Mr. Adamson supposes that the lading had in consequence become disarranged, by which means, a truss containing carpeting or flannel weighing about six stone was thrown off, and falling upon the rails, forced off the truck in question. I also learn from that gentleman, that when goods' waggons form part of a train in which there are passengers' carriages, the former are usually placed between the latter and the engine.

This accident confirms me in the opinion which I had the honour to give you in my report on the Hull and Selby accident of the 13th October, 1840, viz.: that the goods conveyed in railway waggons should be enclosed between a frame-work and not left to depend upon lashings, and that it is better to place the goods' waggons behind the passengers' carriages. In the instance in question, although the accident was not of a fatal character, yet great blame attaches to the person whose duty it was to have secured the tarpauling after the truss of carpeting was taken off at Hayden Bridge, and I think the Directors should be called upon to mark their displeasure at the conduct of this person.

In order to obtain all the information in my power respecting this accident, I called upon the secretary to furnish me with a sketch of that part of the line on which it occurred. I accordingly yesterday received from Mr. Adamson a drawing of which the enclosed is a copy, and from this you will perceive that the accident happened on a plane falling 1 in 330, with the rails laid in a curve of only a quarter of a mile radius.

I need hardly remark that the greatest care is necessary in working lines with curves of such short radii, and I would suggest that the Directors of the Newcastle and Carlisle Company should be advised to issue strict regulations on the following points. First, for passing round such curves at a moderate pace. Secondly, for placing their goods' waggons more generally behind than before the passengers' carriages. And thirdly, for making their servants responsible for any neglect in securing the packages in the goods' waggons.

I have, &c.

FREDERIC SMITH, Lt.-Col., R.E.,
Inspector-General of Railways.

The Right Hon. Henry Labouchere,
&c. &c. &c.

Appendix.

II.
Reports on
Accidents.

No. 3.
Newcastle and
Carlisle.

No. 4.

EASTERN COUNTIES RAILWAY.

REPORT of Lieutenant-Colonel Sir Frederic Smith, on the Accident which happened on the 16th May, 1841.

SIR,

Board of Trade, Whitehall, 8th June, 1841.

You are aware that other and more important duties interfered with my inquiring at an earlier period, into the causes and circumstances attendant upon the accident which occurred on the Eastern Counties Railway on the 16th ultimo, by which the fireman of one of the engines had his leg crushed, and that it was not until yesterday that it was in my power to carry on the required investigation.

By the return received from Mr. Bulkeley, the secretary, it appears that the half-past four o'clock train on the afternoon of Sunday the 16th May, arrived at Ilford in the ordinary course

No. 4.
Eastern Counties.

Appendix.
 II.
 Reports on
 Accidents.
 No. 4.
 Eastern Counties.

and that the engine was forced off the rails in consequence of the points having been wrong, by which means the leg of the fireman was crushed.

I proceeded to Ilford accompanied by Mr. Braithwaite, the engineer of the line, and Mr. Hall, the manager, and I examined the station and the adjoining lines and sidings.

It appears to have been the practice for certain trains in running down to Brentwood, to leave a carriage at Ilford, which is usually put into a siding adjoining the "up line" and a little below the station at the latter place.

On the day in question, the "down train," which started from Shoreditch at four o'clock, left a carriage on the "down line" at Ilford, which was crossed over by police serjeant Otway and a policeman of the name of Andrews to the siding of the "up line" above alluded to, but after so placing the carriage, Andrews who was left in charge of it, omitted to set the points right for the approaching up train, and the engine in consequence, as before stated, went off the rails. The policeman Andrews justifies his neglect by stating, that the points were not in his charge, and that in moving the carriage he was merely obeying the orders of the police serjeant, Otway, who gave him no directions respecting the points, and he added that he had only recently been employed at the Ilford Station, and was therefore not aware of the necessity of adjusting the points for the up train.

The police serjeant, Otway, admits his having neglected to give any orders to Andrews about adjusting the points, but states that it was his intention to have *himself* performed this important duty, had not his attention been unfortunately distracted from it, first, by an altercation which he had with some passengers, who had joined the down train at the Devonshire-street Station, without having procured tickets there, and who refused to pay their fares to him, and secondly, by having to remove some trespassers who had got upon the line.

The manager informed me, that formerly there was a "pointsmen" specially attached to this station, but from it having been found that his services were very little required, he had been removed, and that in consequence the duty of attending to the points had devolved on Serjeant Otway.

I observed that the switches were not of the best description, and that Police Serjeant Otway did not appear to be at all dexterous in their management. On inquiry I ascertained that he has been two years and a half in the service of the Company, and that his character as well as that of the policeman Andrews have been very exemplary.

I feel that it is only in cases of urgent necessity, that it would become my duty to recommend a suggestion being made to a Railway Company to increase its establishment of servants, but I think that the accident now under consideration, which but for the steadiness of the driver of the engine, might have been still more serious, presents a case justifying an observation from the Lords of the Council; for either there should have been a proper "pointsmen" at the Ilford Station, or else the police serjeant and policeman stationed there, should have been better instructed in their duties than they appear to have been. The policeman Andrews should not have been placed there without being instructed, that if he passed a carriage to the siding, it was necessary to adjust the points for the expected train, and it was equally important, first, that Police Serjeant Otway should have known that the placing of the spare carriage in a position of safety and the adjusting of the "points" were of far more importance than any duties connected with the fare of the passengers, and secondly, I think he should have been rendered more expert in the management of the "switches" than he appears to be.

The out-door establishment of the Eastern Counties railway for working the line consists of the following persons:—

- 1 Superintendent.
- 4 Inspectors.
- 1 Sub-Inspector.
- 2 Police Serjeants.
- 30 Policemen.

And 23 Porters.

A strength which does not appear inadequate to the duties required, provided the men are efficient.

The blameable parties connected with the accident in question, are in my opinion not only Serjeant Otway and policeman Andrews, but also the inspector whose district embraces the Ilford Station, and who should have seen that Serjeant Otway was well acquainted with every part of the duty entrusted to him, and I would suggest that each of these persons should be severely admonished by their superiors.

It might be fairly pronounced in ordinary circumstances that the system is lax which would admit of passengers taking their seats in trains without having tickets, but I am informed that in the case in question, the irregularity is chiefly attributable to the defective and exposed state of the Devonshire-street Station which has since been given up.

That part of the Eastern Counties railway over which I travelled, I found to be in excellent order; the cuttings and embankments standing well, and the line well ballasted. I observed in several points where the line is curved in cuttings that the slope of the inner curve is at this moment being altered, so as to admit of the view of the engine-drivers being less obstructed, and Mr. Braithwaite, the engineer, informed me that with this object he intended to construct future bridges across his cuttings with arches in place of the long flank walls.

Mr. Braithwaite showed me a model representing a mode of preventing passengers at intermediate stations, having to cross the line of rails in joining or leaving the carriages. This is a great desideratum, and I trust it will be found to answer the purpose in view. It is to be tried at the Chelmsford Station.

Mr. Hall the manager is engaged in perfecting a system of signals which bids fair to prove superior to those formerly in use.

I have only to add that several of the weekly abstracts of the trains were laid before me, and that they show a degree of punctuality in their arrival at the termini which is very creditable.

I inquired into the circumstances attending the accident on this railway on the 2nd instant, by which a waggoner's boy of the name of Ward had some ribs broken, and received a severe contusion of the knee, while driving an empty waggon on an incline of the Brentwood Hill works. Mr. Braithwaite informed me that this unfortunate boy was in the service of the contractor, and engaged in the construction of that part of the railway which is not yet opened to the public, and as the boy is now doing well, and the accident appears to have been chiefly through his own neglect, I have no further observations to make upon it.

I have, &c.

FREDERIC SMITH, Lt.-Col., R.E.,
Inspector-General of Railways.

The Right Hon. Henry Labouchere, M.P.,
&c. &c. &c.

Appendix.

II.

Reports on
Accidents.

No. 4.

Eastern Counties.

No. 5.

LONDON AND GREENWICH RAILWAY.

REPORT of Lieutenant-Colonel Sir Frederic Smith on the Accident which happened on the 28th May, 1841.

No. 5.
London
and Greenwich.

SIR,

Board of Trade, Whitehall, 3rd June, 1841.

I HAVE the honour to acquaint you that I have this day inquired into the circumstances connected with the accident which occurred, in the course of the public traffic, on the London and Greenwich Railway, on the 28th ultimo, and I have to submit the following report:—

In the return sent in by the Company, dated the 29th ultimo, and signed by Mr. Akerman, the secretary, it is stated that a carriage of the half-past 2 o'clock up-train from Greenwich was thrown off the rails, by coming in contact with a log of wood or post, which had been left on the line by the preceding up-train, to be used in a fence about to be substituted for a part of the parapet wall which had been pulled down. It is further stated that John Nash, the conductor or guard of the train, fell under the carriage that was off the line, and in consequence broke one of his legs; and also that a carpenter's labourer, in the employ of the Company, named Jabez Delderfield, being under alarm, on seeing the carriage thrown off the line, jumped from the new works in the hope of alighting on the scaffolding, but fell and injured his spine.

It is remarked by Mr. Akerman, that a watchman, named Joseph Fryer, had been placed at the spot to keep the line clear, but that from negligence he omitted to remove the post from the rails, and hence was the primary cause of the accident.

Mr. Akerman and Mr. Miller, the resident engineer and superintendent of the line, afforded me every facility for conducting the investigation with which I was charged, and at my request furnished me with such details respecting the accident as were personally known to them.

I examined Mr. Henry James, the overlooker of the line; John Barrett, the foreman of carpenters; Pankhurst, the conductor of the previous train; J. Walker, the driver of the half-past 2 o'clock train; Joseph Fryer, the breaksman or guard of the hinder carriage of the half-past 2 o'clock train; and William Forster, the watchman, whose duty it is alleged to have been to remove from the rails the timber which caused the accident now under consideration.

It appears that the Greenwich Railway Company are now constructing a part of the line which they have covenanted to form for the Croydon, the Brighton, and the South Eastern Railways, and that the workmen are at present engaged on that portion of this new line which lies between the Blue Anchor Road and the junction with the Croydon Railway. In order, as it would seem, to appropriate the materials to the new work, portions of the south parapet wall had been taken down, leaving the line at such places exposed to depredation. But recently, on the representation of the resident engineer, that danger might result from leaving these openings during the Whitsuntide holidays, the directors determined that they should be filled up by means of a wooden fence.

From the evidence of the parties whom I examined, I learn that the wood for this purpose was conveyed from the station at Greenwich to the spot where it was required to be used, partly by the passenger trains and partly by a special engine before the starting of the first train on the morning of the 28th.

The timber and planks, when carried by the passenger-trains, were placed on the hinder platform of the last carriage, and pursuant to the verbal orders of Barrett, the foreman of carpenters, were thrown off the carriage upon the line by the breaksman or guard, without the trains being stopped.

The "beat" of William Forster, the watchman, which was about a quarter of a mile in length, between Blue Anchor Road and the Croydon Junction, comprehended that part of the line where the wooden fence was in course of construction. The 28th ultimo was the first day on which he had performed the duty of watchman on that beat, but by his previous employment in the service of the Company he appears to have had sufficient knowledge of his duty to have been aware that it devolved upon him to clear the line of any obstruction left upon it by other parties.

The timber which caused the accident was conveyed by the train which left Greenwich at quarter past 2. It was placed on the platform of the hinder carriage under the charge of Pankhurst, and was by him thrown upon the line, together with some planks. He had done the

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same by the quarter past 1 o'clock train, and the materials had then been promptly cleared away by the carpenters employed in making the fence, from which circumstance, as well as from the assurance he received from Barrett, the foreman, Pankhurst concluded that the same would be done with respect to the timber and deals which he threw upon the line from the quarter past 2 o'clock train.

Walker, the driver of the half-past 2 o'clock train, informed me that he was keeping a good look out a-head as he approached the spot where the workmen were forming the wooden fence, and that when within about 100 yards of it he saw a piece of timber lying across the south rail of the line upon which his engine was running; he immediately reversed the engine, and directed the fireman to apply the engine-break, and the conductor of the leading carriage to apply his break also. I understood that both complied with this order, but still that the speed of the train was not sufficiently checked to stop the engine before it came in contact with the timber. The engine and tender are said to have both passed over the post and to have regained the rails, but the four leading carriages were thrown off, alternately to the right and left, without however falling on their sides, or, as far as I can learn, injuring any of the passengers.

On inquiring of Joseph Fryer, the breaksman of the hinder carriage of the half-past 2 o'clock train, as to whether he had applied his break, he informed me that he had not done so, because his attention had been directed to throwing off some materials that had been placed on the platform of his carriage.

John Barrett, the foreman of carpenters, stated to me that he had been employed for four or five years by the Greenwich Railway Company, and that he had been in the habit of sending materials along the line both on and in the carriages of the passenger trains.

Having now laid before you in sufficient detail the circumstances connected with this accident, I shall proceed to give my opinion as to the culpability of the parties concerned in it.

In the first place great blame must be attached both to William Forster, the watchman, and Knoeldon, the carpenter, who was employed in forming the fence.

It was the duty of the former to have cleared the line before the arrival of the half-past 2 o'clock train, and it was quite practicable for him to have done so; on the other hand it appears that Knoeldon, the carpenter, had removed the *planks* which were thrown down by Pankhurst with the timber, and it is very surprising that Knoeldon, aware of the danger, and being on the spot with three labourers to assist him, should have left the timber in question in a position to cause imminent risk to the approaching train. There is this difference between the misconduct of Knoeldon and that of Forster, that the former *must* have been aware that there was an obstruction upon the line and negligently omitted to remove it, whereas it would seem that the culpability of the latter consisted in a want of proper vigilance, for he says that he did not see the timber. Both are deserving of the marked displeasure of the Greenwich Railway Company, but as I am informed that the previous character of Forster was most exemplary, I am not, under all the circumstances of the case, prepared to recommend that he should be prosecuted under Lord Seymour's Act; and I find that Knoeldon, the carpenter, is no longer employed by the Company, having completed the work for which he was engaged.

It is now my duty to make some remarks on the state of the Greenwich Railway, and on the practice of sending materials by the passenger trains, which, on this occasion, has been attended with serious consequences.

That part of the permanent way which I inspected was in very indifferent order; in many places the joints between the rails were very imperfect; some of the chairs were loose; many of the spikes were out or broken; and some of the rails were much shaken and weakened by the splitting and laminating of the iron. I am aware that the Directors of the Greenwich Railway are gradually removing the original rails of 50 lbs. to the lineal yard and substituting other rails of 80 lbs. to the yard, and that it is intended to replace the stone blocks by wooden sleepers. These are very desirable alterations and will greatly improve this railway, but I think no time should be lost in rectifying the defects of the present rails and chairs in order to diminish the risk of danger to passengers, and I would suggest that the attention of the Directors should be especially called to the defective state of their line.

When proper care is used there may be no danger in carrying from terminus to terminus by the passenger trains, materials of the nature of those which caused the accident of the 28th, but it appears by no means a safe practice to throw such materials down at intermediate points, with the chance, if not the certainty, of obstructing the line.

From the nature of the traffic upon this railway it might be difficult in all cases to send special engines with materials to be used along the line during the hours when passenger trains are running, but there seems no reason why, on the morning of the 28th, when the passenger trains did not commence running before 7 o'clock, the whole of the materials required might not have been sent for the fence at an earlier hour; and the rule of transporting materials along the line before the first train might be of almost general application.

If, however, there should be any insuperable difficulty to this proceeding which has not presented itself to my mind, then, seeing the want of space for stowage on this line, it would be preferable in cases of emergency, rather than incur such risks as those which caused the accident of the 28th ultimo, to drop one or two trains in the course of the day, so as to leave time for the safe transport of materials.

Right Hon. Henry Labouchere, M.P.
&c. &c. &c.

I have, &c.,
FREDERIC SMITH, Lt.-Col., R.E.,
Inspector-General of Railways.

No. 6.

SHEFFIELD AND ROTHERHAM RAILWAY.

REPORT of Lieutenant-Colonel Sir Frederic Smith, on the Accident which happened on the 3d June, 1841.

SIR,

Sheffield, June 16, 1841.

I HAVE the honour to submit the following report respecting the accident which occurred on the Sheffield and Rotherham Railway on the 3d instant, by which an engine-driver named James Bates, and a fireman named John Richardson, were unfortunately killed, and I beg to state that the information on which my report is founded was chiefly derived from the chairman and officers of the Company, who afforded me the facilities I required for conducting the investigation with which I was charged.

It appears, that in consequence of an agreement that has been entered into between the North Midland Railway Company and the Sheffield and Rotherham Railway Company, the locomotive power is furnished by the latter, not only for their own trains, but also for the trains of the North Midland Company, between Sheffield and the Masbro' Junction, the line being common to both Companies to a short distance beyond the Holmes Station, which is about half a mile from the Masbro' Junction. The engine-drivers and firemen are servants of the Sheffield and Rotherham Company, but the whole of the arrangements for the working of the Sheffield Station are under the direction of Mr. Martin, the head clerk of the North Midland Company at Sheffield, who has the general superintendence, and despatches the trains of both Companies.

In the absence of Mr. Martin, it becomes the duty of Mr. Pritchett, the station master, to start the trains.

On the evening in question, Mr. Martin, being otherwise employed, was not present when the train to which the accident occurred left the Sheffield Station, and it was therefore despatched by Mr. Pritchett.

This train belonged to the North Midland Railway Company; it was started at 7 o'clock, P.M., and consisted of three passenger carriages and eight goods' waggons.

The order in which the carriages were placed is as follows :—

First.—The tender.

Second.—The engine.

Third.—A second-class carriage.

Fourth.—A first-class carriage.

Fifth.—A third class carriage, followed by eight goods' waggons.

The goods' waggons formed a gross load of 43½ tons, and I am informed that the only "break" in the train was that of the tender, there being none to either of the carriages or waggons.

The goods' waggons were attached to the passenger carriages a short distance from the passenger platform, the train being stopped for that purpose. This is the ordinary practice of the station, the goods being under the charge of Mr. Champern, a superintendent, whose duties are distinct from those of the passenger station-master.

The regulations of both Companies prescribe that all the trains shall stop at the Holmes Station, about 4 miles and 655 yards from Sheffield, and the engine-drivers are required to shut off the steam about half a mile before reaching that point, in order that, as it is situated on a plane falling at the rate of 1 in 400 from Sheffield, the trains which have to stop at the station may not overrun it, and that other trains may pass it slowly.

There is not any evidence to show that this was neglected on the evening in question, or that there was any other irregularity in the course of the train; on the contrary, some persons who were near the spot at the time of the accident, have given it as their belief that the steam was shut off according to the usual practice.

It appears, that about half a mile short of the Holmes Station, the fore axle of the tender broke near the right wheel, and that in consequence the engine rushed upon the tender, and after detaching the tank from the frame, fell on its side between the rails. The frame of the tender was thrown across the rails, while the tank was found bottom uppermost, and on the north slope of the cutting. The second-class carriage, which had been the leading passenger carriage of the train, was thrown clear off the rails, and was found topsy-turvy on the north slope of the cutting, the roof of this carriage, with some of its seats, being thrown to the opposite side. The first-class carriage was lying on the top of the second-class carriage. The third-class carriage, and the leading goods' waggon, were also off the line, but were not materially damaged. The remainder of the waggons remained upon the rails.

Most fortunately, there were only seven passengers by this train; and although the whole were in the third-class carriage, none of them were severely injured.

According to the regulations of the Company, about 19 minutes are allowed for performing the journey between Sheffield and Masbro' including a stoppage at the Holmes Station; but although the witnesses I examined were unable to state whether this moderate rate of speed was exceeded on the evening in question, it may fairly be presumed, from the state of disorder in which the carriages were found after the accident, (which is explained in the accompanying drawing,) that the train had been moving at a higher velocity than that sanctioned by the Directors.

I understand that it is the practice, on approaching the Holmes Station, not only to shut off the steam, as I have already mentioned, but also to apply the breaks.

There can be no question that it must be attended with great risk to stop by means of a break on the tender only the progress of a train of between 40 and 50 tons, moving on a descending

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gradient, at even the moderate rate of from 20 to 25 miles per hour, and that this risk must be much increased when the tender is placed in front of the engine.

I examined the broken axletree of the tender, and it appeared to me to have been badly manufactured.

After a careful consideration of all the circumstances of the case, I am of opinion that the accident under review was produced by three causes. Firstly,—by the defective construction of the tender axletree. Secondly,—the improper practice of driving the trains with the tender foremost. And thirdly,—owing to there being no “breaks” on the passenger carriages and goods’ waggons, which might have acted in conjunction with the tender break in stopping the train.

I consider the Sheffield and Rotherham Company to blame in respect to the two first causes, and the North Midland Company in respect to the last cause; and it is my duty to state that I was informed of its being the custom of the last-mentioned Company to send all its trains from Sheffield to Masbro’ without breaks or guards on the carriages. This is a system which I think the North Midland Company should be advised to discontinue.

I was at the same time assured that it is the invariable practice of the Sheffield and Rotherham Company to send a break and guard upon the end carriage of every train.

I find, that owing to a want of proper turn tables, the Sheffield and Rotherham Company had been in the habit, for three months before the accident, to send all the trains tender foremost from Sheffield to Rotherham, but that since the accident, from a conviction of the danger of this practice, (which cannot be questioned,) temporary turn tables have been established, by which the engines and tender can be turned; it will therefore only be necessary that you should express a hope that the dangerous system of running the tender foremost may not again be resorted to under any circumstances, and I think it would be well to call upon this Company to have the whole of their present axles carefully examined, and to take care, for the future, to have new axles submitted to a proper test before they are used, or to have them made under specifications authorizing the Company to inspect them while manufacturing.

I subjoin a list of the trains that run daily on this railway, which will give you an idea of the amount of traffic, and the necessity of the line being kept in good order.

On this point I have only to remark that the mode of fastening the rails and chairs by means of iron keys, is one that cannot be recommended.

It will be observed that in the list of trains, it occurs four times that two trains are noted to start at the same hour. In practice, I am told that one train is detained for a few minutes to let the other get ahead, but I think it would be better to note them in the time table as starting with a proper interval the better to insure the safety of the passengers from collisions in foggy weather.

I enclose a letter, dated 21st instant, which I have received from a Mr. Kirkby, who was a passenger by the train to which the accident occurred. It throws no additional light on the subject, but may be considered as confirming the statement made to me, that there was no break in the train excepting that on the tender.

I do not agree with Mr. Kirkby in his objection to running goods’ waggons with passenger carriages, provided the former are properly constructed, and to this point I am of opinion the Directors should give their attention.

List of Engines and Trains which leave Sheffield daily.

Quarter-past 4.—An engine sent off with the mail guard to Masbro’ for the mail bags.

6 A.M. train.—N. Midland to Leeds, with passengers and goods.

Half-past 7 train.—N. Midland to the South.

Half-past 7 train.—Sheffield to Rotherham.

Half-past 8 train.—Ditto ditto.

Three-quarters-past 8 train.—N. Midland (North and South) to Masbro’.

Half-past 9 train.—Sheffield to Rotherham.

Half-past 10 train.—Ditto ditto.

Three-quarters-past 10 train.—N. Midland (North and South.)

Half-past 11 train.—Sheffield to Rotherham.

Half-past 12 train.—Ditto ditto.

Half-past 1 train.—Ditto ditto.

Three-quarters-past 1 train.—N. Midland (North and South.)

Half-past 2 train.—Sheffield to Rotherham.

Half-past 3 train.—Ditto ditto.

Three-quarters-past 3 train.—N. Midland (South.)

Half-past 4 train.—Sheffield to Rotherham.

Half-past 4 train.—N. Midland (North.)

Half-past 5 train.—Ditto (North and South.)

Half-past 5 train.—Sheffield to Rotherham.

Half-past 6 train.—Ditto ditto.

Half-past 7 train.—N. Midland, passengers and goods.

Half-past 7 train.—Sheffield to Rotherham.

12 min. past 8 train.—N. Midland (South.)

Half-past 8 train.—Sheffield to Rotherham.

Besides coal and goods waggons, and the return trains.

I have, &c.,

FREDERIC SMITH, Lt.-Col. R. E.,

Inspector-General of Railways.

The Right Hon. Henry Labouchere, M.P.,
&c. &c. &c.

SIR,

Swinton, June 21, 1841.

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I WILL make no apology for addressing you on the subject of the accident which took place on Thursday, June 3, by railway betwixt Sheffield and Rotherham (Masbro'), as, being the only male passenger and sufferer, I am enabled to speak experimentally.

It is the honest conviction of my own mind, that the jeopardy the passengers were placed in was in a great measure owing to the merchandize trunks attached to the other carriages, weighing, I presume, 40 tons; and although the engine-man and stoker might in any case have suffered, it is questionable whether it would have been a fatal accident had there been only passenger carriages. The passenger carriages being thus placed betwixt two antagonist forces, the wonder is that all three were not demolished, and all our lives sacrificed. I went to Sheffield on Saturday for the first time since, and returned by the half-past 7 o'clock train, and to my horror I found several merchandize trucks still continued, which frightened me not a little. I was informed, that a man is *now* sent with a break; but it is not clear that, should another accident befall the engine or tender, that there would not be time for the man to apply the break of the trucks before they would be upon the carriages. There is no safety but in abolishing merchandize trucks altogether with passenger carriages, and to allay my fears, the sooner it is ordered the better. The fact of the first carriage being broken up into firewood, points to the desirableness of there being attached to the tender of every train throughout the kingdom a truck laden with ballast, to break or receive the first shock, which would greatly reduce the chances of carriages containing passengers being injured to any extent. I think, too, it ought to go forth to the public, that there are periodical *severe* and strict examinations of every engine and tender, otherwise, when they first come upon the line, and are pronounced good, if they are to continue to run till an accident occurs, the lives of engine-man and stoker can't be worth more than a few years' or months' purchase. It is to be feared that those lines which have been fortunate, as it is called, that is, free from disasters, have considerably relaxed in their attention in this respect. I think that every carriage ought to be hoisted up, that a man may stand upright under them, and not to creep under and just take a slight inspection.

Lieut.-Col. Sir F. Smith,
&c. &c. &c.

I am, &c.,
SAMUEL KIRKBY.

LETTER sent to the Sheffield and Rotherham Railway Company, with Copy of a Report from Lieutenant-Colonel Sir F. Smith, on the Accident on their line of the 3rd June.

SIR,

Board of Trade, 26th June, 1841.

I AM directed by the Lords, &c., to transmit to you a copy of the report of Lieutenant-Colonel Sir F. Smith, on the accident which occurred on the Sheffield and Rotherham Railway on the 3rd instant, and to call your attention to the recommendations therein contained.

To the Secretary of the Sheffield and Rotherham
Railway Company.

I am, &c.
G. R. PORTER.

IN reply to Letter from this Office of the 26th instant, relative to the Report of Lieutenant-Colonel Sir F. Smith.

SIR,

Sheffield, June 28, 1841.

I duly received your letter of the 26th instant, and in reply have to say that the Sheffield and Rotherham Railway Company will endeavour to attend to the recommendations contained therein.

I observe a few inaccuracies in Sir F. Smith's Report and have pointed them out to his notice by letter this day: some may be clerical errors, and will be easily rectified; the most material one, and which affects our Company, is, that, although the management of the Sheffield station is under the care of Mr. Martin, the North Midland head clerk at Sheffield, (as Sir Frederic justly observes in the early part of his report,) and has been so for more than twelve months, yet the report states that the Sheffield and Rotherham Company have been in the habit, for three months before the accident, to send all the trains tender foremost, which is manifestly a mistake, and I hope Sir F. Smith will rectify it.

I remain, &c.,
THOMAS PEARSON, Secretary.

G. R. Porter, Esq.,
&c. &c. &c.

LIVERPOOL AND MANCHESTER RAILWAY.

REPORT of Lieutenant-Colonel Sir Frederic Smith, on the Accident on the 18th June.

SIR,

Board of Trade, Whitehall, 3rd July, 1841.

I HAVE had under consideration the accompanying letter and return from the secretary and assistant engineer of the Liverpool and Manchester Railway Company.

It appears from the details which they contain, that W. Wood, an engineman, who has been four years in the employ of the Company, and who is represented to have been careful and steady, met with his death when driver of the Manchester race train, on the evening of the 18th ultimo, by falling between the tender and the first carriage.

The return states that the deceased had gone from his engine when in motion, apparently for the purpose of speaking to some person in the leading carriage of the train, and that the fatal accident is supposed to have been caused by his foot slipping as he returned.

It appears to me difficult to conceive any conduct more culpable in a railway servant, than for a driver to quit his engine when in motion at the head of a train.

Had there been a necessity for communicating with any person on the leading carriage, it would have been the duty of the unfortunate deceased to have sent his fireman, and not to have himself quitted the responsible and important post entrusted to him, and as I presume that the orders of the Company clearly point out this course of duty to the driver, I am at a loss to account for Wood's conduct, provided he was sober at the time of the accident.

On an occasion of race trains being run, I conclude that the managers of this Company take more than usual pains to ascertain the state of those servants upon whom the safety of the public depends, and as I think it desirable that you should be informed on this and other points connected with the case under consideration, I have to suggest that the following inquiries should be made:—

1st. Whether there is any evidence to show that at the departure of the train from the terminus the deceased was perfectly sober.

2nd. Whether the deceased informed the fireman that he was about to quit the engine, and assigned any reason for doing so.

3rd. Whether the fireman remonstrated against it.

4th. The age of the deceased and his fireman, and how long each had respectively acted in the capacity he filled with the race train.

5th. Whether there is in the code of rules and regulations of the Manchester and Liverpool railway any order distinctly prohibiting any engine driver leaving his engine in the manner Wood appears to have acted, and if it would have been the duty of any other servant of the Company to have reported the irregularity, in the event of no accident having occurred.

I have, &c.

FREDERIC SMITH, Lt.-Col., R.E.,
Inspector-General of Railways.

The Right Hon. Henry Labouchere, M.P.
&c. &c. &c.

LETTER sent to the Liverpool and Manchester Railway Company, transmitting copy of Lieutenant-Colonel Sir Frederic Smith's Report on the Accident of the 18th June.

SIR,

Board of Trade, 8th July, 1841.

WITH reference to your letter of the 19th of June, enclosing a return of an accident by which William Wood, an engineman in the employment of the Liverpool and Manchester Railway Company, lost his life, I am directed to enclose a copy of a report made by Lieut.-Col. Sir F. Smith, to the President of the Board of Trade, and to request that the information therein specified may be afforded.

To the Secretary of the Liverpool and Manchester
Railway Company.

S. LAING.

IN reply to Letter from this Office of the 8th inst., with Copy of Sir F. Smith's Report.

SIR,

Lime Street Station, Liverpool, July 13, 1841.

I HAVE to acknowledge the favour of your communication of the 8th instant, with copy of a report from Sir Frederic Smith, respecting the accident which occasioned the death of William Wood, engineman on this line, on the 18th of June last; and in reply, I am instructed to transmit you copies of the assistant engineer and fireman's answers to the several queries comprised in Sir Frederic Smith's report.

Respecting the observation, that it is concluded that on occasions of race trains more than usual pains are taken to ensure the public safety, it is perfectly true that extra pains are taken on such occasions to accomplish this indispensable object, and have generally been successful.

Should you desire any further information than what is comprised in the enclosed papers, I shall be happy as far as may be to afford it, and have, &c.

H. BOOTH.

S. Laing, Esq.,
&c. &c.

DEAR SIR,

Manchester, July 10, 1841.

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IN compliance with your request, I beg to transmit you answers to the questions contained in the report of Sir Frederic Smith to the Board of Trade.

In answer to the first question, respecting the sobriety of Wood at the departure of the train from the terminus, I beg to refer you to the statement of E. Knight, who was fireman to W. Wood at the time of the accident: he states that Wood was sober when he started from Newton race-course, and in this statement he is borne out by B. Derbyshire, engineman of the other race engine, and by others who saw Wood immediately before he started. When the train was ready to start from the race course, I cautioned him and ordered him to proceed slowly until he was fairly upon the train line; and it appears he did proceed with due caution up to the time of the accident. Had he been in a state of intoxication at the time I spoke to him it is not likely that it would have escaped my notice.

In answer to 2 and 3 also, respecting whether Wood assigned any reason to the fireman for leaving the engine, I beg to refer you to the statement of the fireman, from which it appears that Wood, immediately after starting the engine at Newton, requested Knight to take care of it while he went to the first carriage; Knight cautioned him, and said that everything being wet his foot might slip, and that he had better not try, or something to that effect.

This was all that passed between them; Knight did not know why Wood wished to get to the carriages, nor did he ask him the reason. His farther movements were not particularly observed by Knight, who says that had Wood exhibited any signs of intoxication he would have taken care to prevent his attempting to leave the tender. Question 4—William Wood was 29 years of age at the time the accident happened, and had been an engineman on this line from the 26th March, 1837. E. Knight, fireman to W. Wood at the time the accident occurred, is 22 years of age, and has been fireman on this line since 19th July, 1839. Question 5—In the code of rules and regulations given to each of the enginemen and firemen, it is ordered, Rule 1st, line 6th, that "every engineman and every fireman shall stand up and keep a good look out all the time the engine is in motion, except as to such fireman only when he shall be otherwise engaged about his other duties on the engine or tender."

This is, I think, sufficiently to the point, and clearly shows that Wood acted contrary to orders, by leaving the engine and tender at the time and in the manner he did.

As regards reporting irregularities, it is the duty of every servant of the Company to report to the proper authorities misconduct on the part of any other servant, whether that misconduct may be productive of any accident or not.

Any further explanation you may deem necessary I shall be glad to give.

I am, &c.

GEORGE SCOTT.

H. Booth, Esq.
&c. &c.

EMANUEL KNIGHT.

I WAS fireman to William Wood on Friday, June 18, when he met with the accident which occasioned his death; I observed him when we started from the race course, and at that time he appeared to be quite sober. He did his duty and worked his engine up to the time of the accident with his usual care.

Shortly after the train started from Newton, and before the engine had acquired much speed, he requested me to look to the engine while he went to the first carriage; I said he "had much better stop, as every thing being wet he might very easily slip." I did not pay particular attention to his movements after this, nor did I observe him leave the tender; I saw him in the act of returning from the coach to the tender, and I also saw him fall. Had he not appeared to me to be sober, I would have prevented his leaving the tender.

(Signed) EMANUEL KNIGHT.
Witness, GEORGE SCOTT.

No. 8.

NORTH UNION RAILWAY.

North Union.

REPORT of Lieut.-Colonel Sir Frederic Smith on the Accidents of the 7th instant.

MY LORD,

Preston, 18th September, 1841.

YOUR Lordship's instructions of the 13th instant having directed me to report on the two accidents which happened on the North Union Railway on the 7th instant, I have carefully inquired into the circumstances, and I have the honour of laying before your Lordship the following details respecting them.

The first accident was that at the Euxton station, where the road from Chorley to Eccleston and Southport crosses the North Union Railway on a level.

At this point a train of empty coal waggons, belonging to a Mr. Pearson, and drawn by the Asa locomotive engine, came into collision with the Chorley and Southport stage coach, when on its journey to the latter place. The coal waggons were proceeding from Preston to the Springfield colliery at Ince, near Wigan. There were several passengers by the coach, and, according to the return furnished to your Lordship's department by Captain Chapman, the secretary to the North Union Railway, it appears that one of them was killed and six were injured. The return also specifies that the driver and another servant of the coach proprietors were severely hurt, and that Thomas Nickson, the gate-keeper of the Euxton station, had received such injury in his left leg as to render its amputation necessary.

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In the course of my inquiry into this accident, I examined J. Holland, the driver of the Asa engine; Henry Elston, the driver of the stage coach; and Thomas Nickson, the Euxton gate-keeper; and I received from Captain Chapman such information as I required respecting the general working of the line, in reference both to this accident and to that which will form the second portion of my report.

The North Union Railway, as your Lordship is aware, extends from Parkside to Preston, and is 22 miles in length. It is crossed no less than seven times on the level of the rails, by turnpike or parish roads, and at each of these crossings gates are put up across the road, and placed in charge of a gatesman or keeper, who resides in a lodge erected for him close to the road.

On five of the roads which cross this railway there is considerable traffic, but I am informed that on the other two roads the traffic is comparatively unimportant.

Proceeding southward from Preston, the level crossways occur in the following order, viz.—

1st. The Farrington turnpike road.

2nd. The Leylande parish road. Here two roads unite on the north side of the railway, just after crossing it; so that, in point of fact, this is a double crossing, and four gates are necessary for shutting up the ends of these roads.

3rd. The Turpin Green parish road.

4th. The Euxton parish road. It was here that the collision took place.

5th. The Balshaw Lane.

6th. The Coppal parish road. And,

7th. The Golburn parish road.

The 1st, 2nd, 4th, 6th, and 7th roads are those represented to me to be important.

The ordinary traffic on the North Union Railway consists of six passenger and nine coal trains daily, in each direction, besides occasional trains of merchandize.

With this amount of traffic, and with the number of crossings I have specified, it is obvious that the most unremitting attention of the gate-keepers and engine drivers is required, not only for the safety of travellers by the railway, but also of those persons who cross it on the level.

The accident under consideration occurred between 12 and 1 o'clock on the 7th instant, and according to the statements made to me, the coal train consisted of seven empty waggons of a gross weight of about 16 tons.

The Asa, which is a six-wheel engine, weighs about 13½ tons; and the tender, with the quantity of water and fuel it contained at the time of the collision, is supposed to have weighed about five tons.

The train was proceeding tender foremost, and as far as I can learn, at the rate of about 15 miles an hour. On approaching the Euxton station, there was no indication of the line not being clear for the passage of the train, and therefore the engine-man did not slacken its pace, but on reaching the crossing the tender came suddenly into collision with the Southport coach, which was about to cross the rails, and was not perceived by the engine-driver until too late to prevent the damage that ensued.

The gate-keeper, Nickson, had left the gates open and gone into his lodge, and the driver of the coach, seeing the gates open, naturally concluded that there would be no danger in his passing over the railway, and drove down to the crossing for that purpose, not having heard or seen the train.

It is necessary that I should observe that the approach to the Euxton station, from Preston is in a cutting sufficiently deep to hide an engine from the view of a person passing down the road from Chorley, except for a very short distance, where the chimney would be visible; and for the same reason the driver of the engine would be unable to see a coach advancing towards the railway. I therefore acquit both the driver of the engine and the driver of the stage coach of any blame on this occasion. The proximate cause of the accident was unquestionably the neglect of Nickson, the gate-keeper.

In order to have it in my power to form a fair opinion of the degree of culpability of this man, I inquired very closely into the practice of the gate-keepers in general, and of Nickson in particular, as to the closing of the gates; and also into the nature of the instructions issued by the Directors of the Company for the guidance of these servants. I learnt that Nickson had not been regular in keeping his gates closed, and the cause he assigned to me for his neglect was that gentlemen residing in the neighbourhood, and other persons using the crossing, complained of being detained there while the gates were being opened; and it appears that on one occasion some persons actually pulled up the gates by main force. This feeling may in some degree be accounted for by the circumstance that originally the gates stood across the railway, leaving the passage over it free to the traveller on the highway, except at the moment of the passing of a train; but that, in pursuance of a clause in a general Turnpike Act, of 1839, the gates have been removed from their former position and placed at the ends of the roads, and, consequently, some increase of detention is given to the highway traffic.

This local feeling was, I believe, well known to the railway company, and it might have been presumed that it would form an additional motive for issuing the most stringent regulations for the guidance of the gate-keepers; but I was surprised to find that instead of this the only order touching on the duty of the gate-keepers is an obsolete one referring to the opening of the gates when in their original position across the railway. It is as follows:—

“Gatemen and policemen are to be constantly on the look out, and to open the proper gate where the engines are to pass through.”

It is evident that this order could only tend to perplex the gate-keepers; and looking at the importance of the duty assigned to these men, I think the Company will be right to relieve themselves forthwith of the heavy responsibility which attaches to them in allowing these

servants to remain without the most clear instructions for their guidance on such a point as this.

An opinion seems to prevail in the management of this Company that so many points of duty which may be required from their servants cannot be foreseen, and must therefore be left to their judgment and prudence, that it is inadvisable to enter into detail in the code of instructions, lest, by omitting the mention of any particular duty, an opening should be given to the servants to plead such omission as an excuse for any neglect of which they might be guilty.

I admit that great discretion is required in establishing rules for the guidance of railway servants, and that in many cases it is better to fix general principles than attempt very minute details; but this may be carried too far, and in regard to the duty under consideration I can hardly conceive any case where definition could be more easy, more important, or more urgently called for, than in laying down the rules for the change in the duties of the gate-keepers consequent on the alteration in the position of the gates.

I found that it was not in consequence of any disregard of proper precautions on the part of the engine driver that the coal train was running tender foremost, but from the impossibility of his making any better arrangement, as there is no "turn-table" at the colliery. I entertain, as your Lordship will perceive by some of my former reports, a very strong opinion of the danger of allowing trains to proceed with the tender foremost, except at a slow velocity and on a very straight line, and it should not even then be permitted when it can be avoided.

Amongst the reasons against this practice are the following: that it is much less safe to use the break for the purpose of stopping the train when the tender is foremost; that the driver cannot keep so good a look out; and that the tender is more likely to run off the rails when propelled than when drawn by the engine. The tender of the *Asa* had, as we have seen, 30 tons to resist when its break was applied.

I have to observe that the agent of the Spring Field colliery informs me that, in consequence of the accident of the 7th instant, the proprietors have ordered turn-tables to be fixed on their premises, to prevent the necessity of working the trains, in any case, with the tender foremost.

I think it very desirable that the North Union Railway Company, who by their Act of Parliament have the power of regulating the working of their line by colliery trains, should issue an order prohibiting the tenders being propelled, except in cases of emergency; and an order should also be given for the steam whistle being used when any train approaches a level crossing of a turnpike or parish road.

I must not omit to mention that the Euxton gate-keeper, suddenly hearing the engine and the coach approaching, both at the same time, ran to the gates in hopes of being able to close them, but he was too late, and being thrown down received the injuries which required his leg to be amputated, as I have already stated. Had not this poor man been thus so severely punished, his neglect to keep the gates shut would have subjected him to dismissal and prosecution, and it would be well that the Directors should publish to their servants the sense they entertain of this man's misconduct.

I have much satisfaction in stating that I have been informed that the Directors of the North Union Railway, fully sensible of the risk incurred at their level crossings, as well by the passengers on the railway as by travellers passing over it, have expressed serious intentions of building bridges over the railway at the five most important crossings, and have ordered estimates to be prepared forthwith for these works. I trust that no motives of economy will induce them, by weighing the cost against the advantages, to abandon the idea of an improvement which would tend so essentially to the public safety, and I would earnestly recommend that Government and the Parliament should give every facility that the Company may require to carry into effect so desirable an arrangement.

The second accident, on the 7th instant, was caused by the collision of two passenger trains at the Farrington station, about $2\frac{1}{2}$ miles from the Preston terminus, to which both trains were proceeding.

I examined the guards and drivers of both trains, and the gate-keepers at the Farrington and Leyland stations, and elicited from them the following details.

The first train, which by way of distinction I shall call the *heavy train*, consisted of eight railway carriages, a truck, on which there was a private carriage, and a horse-box. In the second, which was the mail train, there were only four or five railway carriages and a post office carriage.

The heavy train left Parkside at 5 h. 53 m. p.m., and was liable to be stopped at the seven under-mentioned stations, and actually did stop at six of them.

I shall place these stations in the order in which they occur, beginning at Parkside, viz., Golburn, Wigan, Standish, Coppul, Euxton, Leyland, and Farrington.

I find, by reference to the time book at Parkside, that the mail train was despatched from thence at 6 h. 23 m. p.m., and had only to stop at the Wigan and Euxton stations. Thus it appears that the second train did not start till 30 minutes after the first, an interval amply sufficient, under proper management, to prevent a collision in a journey of only 22 miles, supposing both trains to be similarly circumstanced; but as the leading and heavier train stopped at four stations, which were passed by the mail train without stopping, and as each stoppage would, by the slackening of speed and the actual detention at the stations, be equivalent to a loss of from three to four minutes, the effect would be the same as if the trains had started with an interval of only 14 or 15 minutes. Then, again, the weight of the leading train was nearly double that of the mail, and this, on a line having gradients of one in a hundred, as is the case on the North Union, could not fail to reduce very considerably the

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relative velocity of the heavier train, and as the rails were wet, the difference would be still more increased.

From all these circumstances, which must have been known to the driver of the mail train, he ought to have performed his journey with great caution.

There is reason to believe that the heavy train passed the Leylande station only a very few minutes before the mail. If this were the case, the keeper of that station should have given notice of it to the driver of the latter, by exhibiting the signal of caution; but this was not done, and the station keeper states that the heavy train went by at least 10 minutes before the mail. Had this been the fact, no blame could have been imputable to this person; but the station-man at Farrington asserts that the heavy train had only just pulled up when the mail came in sight, which was at about the distance of half a mile; and as the two stations are only two miles apart, the time of transit between them could not have occupied four minutes, as the velocity of the mail was probably about 30 miles an hour. Here then is some glaring error, and as it is unlikely that the heavy train had been more than two or three minutes at Farrington, and the persons who were there are of this opinion, it is evident that the station-man at Leylande has given erroneous testimony.

The article in the North Union code which is intended to apply to the station or gatesman, in respect to the interval between trains, is unsatisfactory. It is to the following effect:—

“If a train approaches when a previous train has only passed a few minutes before, the gatesman must signify it by holding or hanging the hand lamp conspicuously two feet under the gate lamp.” And it goes on to say that if the previous train has passed only two minutes, the next train should be stopped. Now what I object to is, in the first place, the indefinite nature of the former part of this order, for the word “few” may be differently understood by every gate-keeper on the line; and, in the second place, an interval of two minutes is far too little between trains, as it leaves no margin for safety in the event of an accident happening to the leading train.

On some of the best managed railways no train is allowed to pass a station within five minutes of another, and the signal of caution is kept up at every station, until a train has passed or quitted it upwards of 10 minutes.

These rules are in my opinion indispensable for the public safety, and I trust that the managers of the North Union will no longer remain insensible to their great importance.

In almost all the best regulated lines, also, the station-men are required to note the time of arrival and departure of the trains, and some Companies even require that the times of the passing of those trains which do not stop should also be noted. Had such a regulation existed on the North Union, I believe the collision at Farrington would not have taken place, and I therefore hope it will be adopted, as I consider it very essential.

After the accident of last year at the Nine Elms, which arose much from similar causes to those which produced the Farrington collision, I proposed this rule, which was forthwith included in the code of the South-western Railway, and to it I attribute in a great degree the punctuality and increased safety which immediately prevailed on that line.

Article XXVI. of the North Union code prescribes that a red light should be shown on the last carriage of every train, and the guard is held responsible for the due observance of this order, notwithstanding which neither of the trains in question had lights on the 7th instant. It is true that up to the day preceding this accident the heavy train had reached Preston by daylight; and when it started from Parkside on the 7th there was no reason to expect a different result, in which case a tail lamp would have been unnecessary, so far as the safety of the passengers was concerned; but this train did not on that evening reach Farrington, which is two and a half miles short of Preston, till it was dark, and while standing there it was run into by the mail train, and seven of the passengers and one of the servants of the Company were injured.

The absence of the lamp from the hinder carriage of the heavy train was one cause of the accident, for it would have given warning to the driver of the mail at a much greater distance than the red lamp of the station which was exhibited to him.

The mail had neither a tail lamp nor any other light attached to it, and as it was a matter of certainty that this train could not finish its journey before dark, its guard was even more reprehensible than the guard of the heavy train, though both were highly to blame.

It appears that there is no store of tail lamps at Parkside for the North Union, and therefore the trains can only be provided with them at Preston, which renders it a very important part of the duty of the station-master there to see that no train that can require one of these lamps, either for the journey out or home, leaves Preston without it.

The servants of the Company who were present when the collision took place, admit that the station-man turned on the red light as soon as the mail train was seen approaching, (which was at the distance of about half a mile,) and that he ran towards it holding up a hand lamp; and the station-man asserts, that he had proceeded a hundred yards from the station before he met the train. If these statements be true, the driver of the mail acted in a most reckless manner, but both he and his fireman declare that they had been keeping a good look out, and that it was owing to the foggy state of the atmosphere that they did not perceive the station lamps until too late to prevent the collision.

The driver of the heavy train, on perceiving the mail, put his train in motion, but sufficient velocity was not obtained in time to avert the accident. The engine, however, broke away with five carriages from the rest of the train, but without either the driver or fireman. The former states that he was thrown off by the concussion, and the latter that he had gone to see that the station lamp was properly exhibited; the character of both individuals, I understand, is such, as to justify a belief in these statements. Fortunately the engine and carriages were

stopped at Preston by one of the servants of the Company, who deserves great credit for the presence of mind and courage he displayed.

It is incumbent on me to state that the driver of the heavy train mentioned his having found, before reaching Wigan, that owing to the very slippery state of the rails, and the weight of the train, he would be unable to keep his time on the journey without additional power, and that he therefore applied for the bank engine, which is usually kept at Wigan, in readiness to assist heavy trains, but was told that it was disabled.

I believe that the stock of the North Union Company, if duly applied, is sufficient to ensure this extra power whenever required, and it behoves the managers of the line to inquire into the conduct of those who ought to provide an efficient spare engine at the Wigan station. This duty was the more imperative on the 7th instant, when, owing to the unfavourable state of the weather throughout the day, it was highly probable that extra power would become necessary.

After carefully considering the case of the collision at Farrington, in all its bearings, I am of opinion that the engine-man of the mail train must have driven at a rate of speed, which, under the circumstances alluded to, and the foggy state of the weather, was unjustifiable; and if not dismissed, he should at least be subject to some punishment. The fireman was a mere lad, who, I think, ought, until more experienced, to be employed only on merchandize or ballast trains. The station-man at Leylande neglected his duty, and should be severely reprimanded; and I very much question the propriety of either of the guards being retained in the service of the Company.

I feel it to be my duty to remark, that the signal lamps, as well as the carriage and hand lamps, on the North Union Railway, are of a very imperfect description; and I recommend that the attention of the Directors be called to the necessity of a revision of their code of signals.

It will be obvious to your Lordship, from the details which I have had the honour of laying before you of the accidents under consideration, that both are attributable either to an ignorance on the part of some of the railway servants, as to the nature of their duties, or to a grossly culpable disregard of them; and it is equally evident that neither of these sources of danger to the traveller could have been suffered to exist under a superintendence of habitual vigilance.

I conceive I have acted in the spirit of your Lordship's instructions, and certainly in accordance with my own feeling, in not carrying my inquiries into the more minute arrangements of the Company, and in confining myself to the circumstances connected with the accidents which I have been directed to investigate.

The Earl of Ripon,
&c. &c. &c.

I have, &c.,
FREDERIC SMITH, Lt.-Col. R. E.,
Inspector-General of Railways.

LETTER sent to the North Union Railway Company, with Copy of Sir Frederic Smith's Report on the two Accidents on the 7th September.

SIR,

Board of Trade, 25th September, 1841.

I AM directed by the Lords, &c., to inclose a copy of Sir F. Smith's Report on the two accidents which recently occurred on the North Union Railway, and to request that you will submit the same to the Directors of the North Union Railway Company, and call their especial attention to the suggestions therein contained.

Their Lordships are desirous of impressing on the Directors the following recommendations which appear essential for the public safety.

1. That positive instructions should be issued to the gatekeepers at all the level crossings on the line to keep the gates constantly shut across the roads, unless when opened by the gatekeeper to allow carriages, &c., to cross the railway, in conformity with the Act 2 and 3 Vict. c. 45. Their Lordships direct me to point out that under this Act, and the Act 3 and 4 Vict. c. 97, for regulating Railways, the Company have ample powers for enforcing this regulation both on their own servants and on the public.

2. That a regulation should be issued making it imperative on engine drivers to sound the whistle on approaching a crossing.

3. That a regulation should be issued prohibiting the practice of running tender foremost unless in cases of emergency.

4. That the regulations for preserving a proper interval between trains, should be carefully reconsidered.

5. That signal, carriage, and hand lamps, of the best construction, should be provided.

6. That no train which may, by possibility, not finish its journey before dark, should be allowed to start without proper tail lamps.

Their Lordships, in conclusion, direct me to state that they consider it very desirable that bridges should be erected at the crossings where the traffic is considerable, and especially at the Euxton crossing, where the depth of the cutting prevents the approach of an engine from being seen, and they trust that the arrangements alluded to in Sir F. Smith's report for that purpose will be carried into effect.

To the Secretary of the North Union
Railway Company.

I am, &c.,
S. LAING.

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IN reply to Letter from this Office of the 25th October, with copy of Sir Frederic Smith's Report on the two Accidents on the Line.

SIR,

North Union Railway, Preston, October 29, 1841.

I HAVE the honour to acknowledge the receipt of your letter of the 25th September, inclosing a copy of Lieut.-Col. Sir Frederic Smith's Report on the two accidents which have recently occurred on this railway.

These communications have received the most anxious attention of the Directors, and I am now instructed to lay before the Board of Trade several new regulations, as well as additions to the old ones, either suggested by longer experience, or rendered necessary by a change of circumstances. Other measures are also in contemplation, having for their object the greater safety of the public, but being of a mechanical nature they will require some little time to mature and to bring into operation.

The Directors would not have felt themselves called upon to notice various topics introduced into Sir Frederic Smith's Report, did they not apprehend that their silence might be taken as an admission of the justness of his remarks and conclusions.

Whilst the Directors do not claim for those in their employ that entire freedom from infirmities and imperfections which seems to be looked for, in a larger degree, in this than in any other class of servants, they believe them in the main to be sober, active, and intelligent; the discipline of the line they contend is essentially strict, without being vexatious or oppressive, its staff and general equipment ample and consistent with its rank amongst other railways; and allowing for the difference of circumstances, equal to those of the "best regulated lines" in the kingdom.

With respect to the insufficiency of certain of the rules, particularly that part of the rule (originally numbered 30) animadverted upon in the report, though they admit the charge, they call upon Sir Frederic Smith to share the blame, if any, with them, since the law in question must necessarily have passed under his supervision before it was permanently retained in the Company's code.

The Directors, however, are disposed to complain of the tone of disparagement which runs through the whole report, but ungracious and unmerited as they conceive it to be, they beg to assure the Board of Trade that no feelings to which it may be supposed to have given rise shall ever betray them into the slightest relaxation of duty, though at the same time they may be allowed to observe that a juster appreciation of their management would only have operated as an additional stimulus to their exertions, not merely to go along with, but to anticipate the requirements of the Board of Trade.

The sweeping censures towards the conclusion of the report upon the discipline and management of the line, whether levelled at the Directors or the executive, are, they conceive, uncalled for and unjust; and if regularity of despatch, and freedom from accidents, may be received as evidence, these strictures are singularly inapplicable to the North Union Railway, inasmuch as since its opening, now three years ago, no casualty has befallen a single individual (up to the late occasion) of nearly a million of passengers who have been carried upon it, and the precision with which the post office business has been performed has been such as to call forth the approbation of the authorities of that department. Waiting the approval of the Board of Trade to the amended code of rules for the Company's servants, and to the nine new bye-laws enclosed,

G. R. Porter, Esq.,
&c. &c. &c.

I am, &c.,
JAMES CHAPMAN, Sec.

LETTER sent to the North Union Railway Company, in reply to their Letter of the 29th October, relative to Sir F. Smith's Report on the two Accidents, &c.

SIR,

Board of Trade, 13th November, 1841.

WITH reference to your letter of the 29th October, conveying certain observations of the Directors of the North Union Railway, on Sir F. Smith's report on the two accidents which recently occurred on that line, I am directed, &c., to observe that it was far from being the intention of their Lordships to cast any stigma upon the Board of Directors, or upon any individual, or to express any doubt of the anxiety of all parties connected with the management to protect the public safety. At the same time, however, the fact, which does not appear to be contradicted, that two accidents occurred in the course of the same day, by which one person lost his life, and nineteen sustained personal injury, and that both these accidents arose, not from causes beyond the control of the Company, but from admitted defects in the regulations, and irregularities on the part of servants, appears to their Lordships fully to bear out the statement of their Inspector-General that defects existed in the discipline and management of the line.

Without professing to say to whom those defects were attributable, or that they were the result of wilful and culpable neglect, their Lordships thought it their duty to lay the report of their Inspector-General, which had met with their approval, before the Directors, in the hope, which they are glad to find has been realised, that it would call the attention of the Directors to the necessity of introducing such reforms as appeared calculated to diminish the chances of a recurrence of accidents.

Their Lordships have only further to observe, with reference to the remark that the Inspector-General must share the blame of the defective rule animadverted upon in the report, since it must necessarily have passed under his supervision before it was permanently retained in the Company's code, that the only regulations which in terms of the Act for regulating railways require their sanction, and for which they are responsible, are, "Bye-laws, rules, and regulations which inflict penalties for their enforcement on *persons other than servants of the Company.*"

With regard to regulations for the management of the line, and government of servants, their Lordships do not interfere; unless, as in the present instance, the regulations may be called in question by the occurrence of an accident, or specially submitted for their approval; and even in those instances their Lordships confine themselves to communicating to the Directors such suggestions and recommendations as they may be advised by the Inspector-General are calculated to improve the code, and to promote the public safety.

To the Secretary of the North Union
Railway Company.

I am, &c.,
S. LAING.

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GREAT WESTERN RAILWAY.

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REPORT of Lieutenant-Colonel Sir Frederic Smith on the Accident on the 7th instant.

MY LORD, Railway Department, Board of Trade, 10th September, 1841.

I HAVE the honour to report that, pursuant to your Lordship's instructions, I have this day proceeded to Wootton Bassett, accompanied by Mr. Saunders, the secretary and general superintendent, and Mr. Gooch, the manager of the locomotive department of the Great Western Railway, and in the presence of those gentlemen I inquired into the accident that occurred on that line to the night mail train of the 7th instant, which, in its route from Bridge-water to Paddington, was thrown off the rails of the embankment of the Wootton Bassett incline plane, near the eighty-sixth mile from London.

By this accident, which was brought under your Lordship's notice by Mr. Saunders' letter of the 8th instant, I regret to say that one passenger was very seriously and three or four others less severely injured, and two servants of the Company slightly hurt.

It appears that the train in question was drawn by two engines, the *Rising Star* and the *Tiger*, and consisted of two second class *close* carriages and one first class carriage, the latter being at the hinder end.

The train which preceded the mail train up the incline was the 6½ P.M. from Bristol, and it passed safely along the embankment at half-past 8 o'clock. Mr. Gooch, who was in that train, informed me that he was not sensible of any extraordinary motion, such as would be produced by an important depression of a part of the rails.

The mail train, however, commenced the ascent of the plane at about 2 o'clock A.M., and on its reaching a spot on the embankment, near the eighty-sixth mile post, the *Tiger*, which was the second engine, suddenly went off the rails, and was followed by the two leading carriages, but the fore-wheels only of the first class carriage were found to have quitted the rails.

The leading engine, the *Rising Star*, and its tender, broke away from the rest of the train, and continued on the rails, but the other engine and the carriages came into collision with each other, by which not only were the persons I have alluded to wounded, but the carriages much damaged.

The front of the leading carriage was broken in by coming into contact with the timbers of the *Tiger's* tender; and the front part of the second carriage, as well as the hinder part of the first, were equally damaged. The passengers who sustained injury were in the leading carriage of the train.

I was informed that the *Tiger* and the carriages ran on nearly a hundred yards from the point where the former left the rails, breaking the transoms which connect the north and south lines of the longitudinal timbers.

It was a piece of great good fortune that they passed between these lines, for had they taken the opposite direction they would in all probability have gone over the embankment.

As soon as the carriages were stopped, and the passengers had received the attention they required, the drivers and conductors of the trains examined the ground, and discovered that there had been a slight slip of the embankment, and that some of the longitudinal timbers of the north line had sunk about three or four inches below the level of those on the opposite line, at the spot where the engine quitted the rails.

Whether the subsidence of the embankment, and the consequent depression of the timbers, had taken place *before* the train came upon them, or whether the weight of the two engines and their tenders passing over a part of the embankment, actually, or on the point of being in motion, caused the slip, it is impossible to determine; but Mr. Collins, the superintendent of the earthwork on this part of the railway, states that in walking along the line at about 6 o'clock in the evening, he observed symptoms of subsidence at the spot where the slip took place, but that as there was no appearance of the foot of the slope having bulged, he did not think the matter sufficiently urgent to require him to give orders for the slope at this spot being particularly watched during the night.

I am disposed to think that the subsidence continued very gradually from that time to the passing of the train at half-past 8, and that the weight then increased and accelerated it; but

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that the depression of the timbers, which caused the Tiger, and the carriages behind it, to leave the rails, was mainly produced by the weight of the Rising Star and its tender.

The whole incline is a mile and three-eighths in length.

The embankment in question, which was formed as far back as 18 months since, is a mile in length and 30 feet in extreme height. The height where the accident occurred is only about 16 feet, and the base of the slope is between once and a half and twice the height.

The material of which the embankment is composed is very unfavourable for such a formation, and it has occasionally slipped in various places; and, amongst other spots, a slip occurred some time ago at the point where the accident now under consideration has taken place.

This tendency to subside induced the Directors of the Company to order an extra width to be given to the embankment, and it is now of the unusual breadth of 45 feet.

The night was not dark when the accident happened, but the engine drivers informed me that the moon was obscured at the time, and as the train was running at certainly not less than the rate of about 35 miles an hour, I do not think that any vigilance on the part of these men, who are represented to be very respectable and intelligent, would have enabled them to stop the train after they had advanced close enough to perceive so small a slip, as there is every reason to suppose this to have been; I therefore acquit these drivers of all blame on the score of vigilance.

It is proper that I should here observe that neither of the carriages of this train had a break. It is true, that in this case breaks could have been of no use, unless self-acting, but I understand it was a very unusual omission for this railway.

I find that at each end of the incline a policeman is stationed, who has the charge of the switches, and that the orders given to these men is to patrol the space between their respective posts. I saw one of them (Holloway), who had the charge of the upper end of the incline, and he acquainted me that although his instructions did not positively require him to do so, he had on the night of the 7th, before the arrival of the mail train, walked above half way down the plane and saw no symptoms of subsidence. But the slip was considerably lower down, and in the beat of the other policeman, whom I was not enabled to examine, as he was absent from the station at the time of my inspection; as, however, I do not think I should get any very satisfactory testimony from him, since most probably he did not perceive the slip, if it existed when he passed the spot, or did not think it of sufficient moment to induce him to stop the train. I do not consider it necessary to delay my report till I have seen this person.

I enclose for your Lordship's perusal copies of the instructions and general regulations issued by Mr. Saunders, under the sanction of the Directors, for the guidance of the policemen, and you will perceive that the duties of these men, in respect to the examination of the earthwork, is very clearly pointed out.

I fear it is too much the practice, from what I have seen on various railways, for the men to underrate the importance of the regulations, and I think it would be well if the inspectors on all lines were required, as a part of their own duty, occasionally to examine the men in their respective districts, to ascertain whether they have a clear and distinct notion of the orders given for their guidance.

It is to be regretted that the policemen stationed on the incline had not been directed to watch the slopes very narrowly, especially in the night, and it would have been well if Mr. Collins, whose experience of the material with which it is formed must have made him well acquainted with its treacherous nature, had called their especial attention to the point where the slip occurred.

I would now suggest for the public safety, that shortly before the passing of a train on either line, at least after dusk, and until the embankment has become *thoroughly settled*, that one of these policemen should pass along that line of rails which is to be used by the train, in order that if he should discover any dangerous part he may be able to give such notice of it to the engine driver as to admit of his pulling up in time to avoid an accident.

In various parts of the Wootton Bassett incline, and at other points between that district, I observed a great want of ballast, and I consider it highly important that the deficiency should be supplied with the least possible delay. At some places also the longitudinal timbers require to be more firmly packed up, and some of the rails are not properly screwed to the timbers.

There is another slip on the Wootton Bassett incline which will demand careful watching, and it would be desirable to give before the winter greater width and slope to some parts of the lofty embankments between Chippenham and the ninety-six mile post.

I observed that at the Chippenham and Pangbourn stations, for want of proper gates and fencing, the line is left open to the trespass of cattle. This defect should be forthwith remedied here, and at any other stations where it may exist.

Having in my report, dated the 1st July, 1841, on the opening of the line from Chippenham to Bath, stated that it was the intention of the Great Western Company to light the Box Tunnel with reflector lamps, it is now my duty to state that this tunnel is *not* lighted. I am not aware of the cause of the departure from the intention I have specified, or of the delay in carrying it into effect, but I believe that the lighting would add essentially to the comfort of the travellers and in some degree to their safety, for as it is not the practice of this railway to have white lights at the head of the engines the drivers have at present no means of discovering any obstruction that there might be on the rails in front of them.

The incline which passes through the Box Tunnel being three miles in length and the gradient being 1 in 100, extra power is required to ascend the plane, owing to the want of adhesion of the large wheels of the ordinary engines of the Great Western. This extra power

is obtained by means of a bank engine having coupled wheels of 5 feet in diameter, and this engine is used as a propelling force.

The reasons assigned to me for this mode of using the extra power have not satisfied me of its necessity, nor that it is as safe as if the bank engine preceded the train; for if the leading engine, or any of the carriages should get off the line, a description of accident that does occasionally happen, the propelling engine would in all probability run into them and produce fearful consequences.

The chief reason given for the present system is that it saves a few minutes of time, but as I do not think that in any case this would be a sufficient ground for exposing the passengers to even the slightest degree of danger, and in the Great Western, where the general velocity is so satisfactory, there is the less ground for incurring an extra risk, I think your Lordship's department should be relieved from any responsibility in this case, by bringing the subject under the consideration of the Directors of the Company.

I have only further to add, that as the train of the 7th instant consisted of only three carriages, it was obviously unnecessary, and certainly diminished the safety of the passengers, to use a second engine in the night over that district of the line where the accident occurred.

The Earl of Ripon,
&c. &c. &c.

I have, &c.,
FREDERIC SMITH, Lt.-Col., R. E.,
Inspector-General of Railways.

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BRISTOL AND EXETER RAILWAY.

REPORT of Professor Barlow on the Accident of the 11th September, 1841.

MY LORD,

Woolwich, September 20th, 1841.

I HAVE the honour to inform you that immediately after receiving your Lordship's instructions to inquire into and report upon the circumstances connected with the accident, which occurred on Saturday the 11th instant at the Bridgewater Station of the Bristol and Exeter Railway, I proceeded to Bristol, and called on Mr. Clarke, the general superintendent of the line, and was accompanied by him the next day to Bridgewater, where he and Mr. Ashbee, the superintendent of the station, afforded me every means of informing myself of the particulars connected with the accident, as far as that information could be obtained at the station.

In order to render the following statement as intelligible as possible, I accompany it with the annexed sketch, by which it will be seen that the Company's premises at Bridgewater, consist of two station-houses and two yards, into which the coaches, omnibusses, and private vehicles drive, for the purpose of conveying the passengers to or from the stations. The one on the north or left hand, being that from which passengers leave when going towards Bristol, and that on the right, the departure station for the passengers on their arrival from Bristol.

It will be seen that these yards are bounded to the westward by a road leading from Bridgewater to a farm on the other side of the line, and that to arrive at, and depart from, the right hand station, it is necessary that the coaches and passengers to or from Bridgewater should cross the line of rails, but as this crossing is beyond the station no danger would be thereby incurred, (while this place remains a terminus,) except for the practice that has been hitherto adopted of shifting the arrival carriages from the down to the up line, during the time that the coaches, passengers, &c., are passing from the station towards Bridgewater.

The only reason assigned for this very objectionable proceeding is, that it expedites the placing the engine in the engine-house after its journey, which house being above the station, that is, between the station and Bristol, the engine cannot be housed till the carriages have been shifted from the down line.

It appears that on Saturday, the 11th instant, the London mail train arrived at the Bridgewater Station at about four o'clock in the afternoon, at which time there were waiting in the departure station-yard, five Exeter coaches and two omnibusses, and, as usual, while the passengers' luggage, mails, &c., were being transferred from the platform to the several coaches, the engine had taken across the road above-mentioned, all the open or second class carriages; and having placed them on the up line side, had returned to its assigned station at the point marked B, where the engine driver, who is wholly under the command of the switch man during this operation, waited the signal from the latter to return.

The Brilliant Exeter coach had already left the station and crossed the rails and was proceeding towards Bridgewater, when the switch man gave the signal "all right" for the engine to return to the station for the first class carriages; at the same moment, apparently, the Exquisite Exeter coach left the yard, and in crossing the rails was struck by the tender, which was before the engine and immediately turned the coach over. The tender struck the fore wheel of the coach, the horses were disengaged without sustaining any damage, and I am happy to state that the injury sustained by the passengers was less serious than might have been apprehended from the fearful nature of the accident.

It appears, that including the coachman, there were 12 persons on the coach, of whom only one received so much injury as to be disabled from getting up and returning to the station. And they all proceeded the same evening on their respective journeys excepting the gentleman alluded to, Mr. Bruford, who was conveyed to the Clarence Hotel, where he was attended by Messrs Toogood and Parsons, the principal surgeons of the town, and under whose skilful

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treatment, Mr. Bruford was sufficiently recovered to be able to proceed to Taunton on the Monday. Another passenger, Mr. Hatchwell, had his leg injured but not seriously.

The greatest misfortune befell an aged woman who was standing on the side of the line, near the place of the collision. It appears that when the coach was thrown over it fell against her, broke one of her legs just above the ankle, besides otherwise severely bruising her about the head; but I was happy to learn from Mr. Toogood, that she is going on very favourably, and that he has great hopes of her recovery. At his particular request, I saw her in the infirmary, she appears to be a very poor woman in the neighbourhood, aged 73, brought to the spot from mere curiosity; she had been warned off the line once or twice by the porter, but at the time of the accident she was in a safe place, if the collision had not occurred at that spot.

Such being the amount of the accident, it remains to inquire to whom the blame is attributable and the means of prevention in future.

The engine-man and fireman appear to be wholly exonerated from any blame. The engine-man, as already stated, is under the control of the switch man during the time of crossing and transferring the carriages, and this man, *Benjamin Cox*, states in his evidence, that he had signalled the driver that "all was right," and that the driver in consequence started his engine, whistling as usual. He states also that he saw the fireman apply the break as soon as the latter was aware of the danger. As far therefore as any fault was committed in starting the engine, Cox becomes the person responsible. I asked Cox whether he had any written orders, or whether he acted on his own discretion. He stated that he had hitherto acted on his own discretion, but that he had now written orders; a copy of which he gave me, and which I annex to this report. I then asked him whether he saw the *Exquisite* at the time he made the signal to the driver; he says he did not, he saw the line was clear, and gave the signal accordingly; he saw the coach coming out of the yard immediately afterwards, and that he then made signs by holding out his hand to the coachman and *hallooing* to him; but *he would drive on*. "He states that Johns (the coachman) seemed to hesitate before crossing the line, and then when the engine was not more than five yards from him he proceeded to cross the line."

Another of the Company's servants, Edward Early, foreman of the carriage porters, says, "I saw Johns' coach, it was the first out, he attempted to cross the line when the whistle was blowing, and the tender not more than 12 yards from him; I have warned him of crossing repeatedly."

Another witness William Jones, the policeman on the platform, also states that the *Exquisite* was the first coach out; but from subsequent inquiries I made, I feel convinced that this was not the case, but that the *Brilliant* had passed over before the *Exquisite* made the attempt.

I have stated above, that all the passengers having left Bridgewater on the evening of the accident or subsequently, I could not learn from them their impressions as to the party they considered to blame; but one person, Mr. Liqueurish, who is agent, at Bridgewater, to Mr. Whitmarsh, part proprietor of the *Exquisite*, was on the coach behind at the time, merely riding up from the station, and he states positively, that the *Brilliant* was the first coach out, and that it was in sight going towards Bridgewater when the *Exquisite* was struck; and he thinks it possible that Johns, the driver of the *Exquisite*, having his attention fixed on this leading coach, might be in some measure the cause of the accident; on being asked the question whether he heard the whistle, Mr. Liqueurish says, he certainly did not, and that although standing up behind the coach, he was not aware of any danger till the moment the accident occurred, he thinks "perhaps just time enough to have pulled up if he had been the coachman." He says, although he did not hear the whistle, he by no means asserts that the whistle was not blowing; in the bustle of leaving the yard, it might be blowing without his noticing it. Johns, the coachman, also denies having heard the whistle, although I believe there is no doubt it was sounded. Johns also asserts that he was not aware of his danger till it was too late; he admits hesitating for a moment when he first saw the danger, as stated by Cox, "but thought his best chance was to drive on."

It is proper here to state, that the persons at the railway lay great blame to the coachman, and Mr. Ashbee states, that Mr. Slocombe, one of the passengers, who sat behind Johns, said after the accident, that "no blame was attributable to the railway people; it was all Johns' fault, he would whip on." These contradictory assertions made me anxious to learn if possible what was the impression of Mr. Bruford who was on the box with Johns. I therefore called on Messrs. Toogood and Parsons, the surgeons who attended him, to ask if they had heard him make any remarks on the subject but they had not. I also inquired of Mrs. Sutton, the landlady of the Clarence Hotel, if he had spoken to her as to any blame. She said he had made but few remarks respecting the accident, but he had several times inquired about the coachman and expressed his hope that he was not hurt.

Upon the whole of this evidence, some of it contradictory, it appears to me that the coach and the engine started nearly at the same moment, that the *Brilliant* was the first coach out, and that the attention of Johns was engaged in overtaking the *Brilliant*, and that he either did not hear the whistle, or disregarded it, hoping to pass before the engine. Independently, however, of hearing the whistle, it seems very extraordinary that the coachman mounted on his box, within 50 or 60 yards of an engine straight before him, without any intervening object, should not have seen it advancing, yet such he asserts was the case. But however heedless or reckless may have been the conduct of the coachman, or whatever the indiscretion of Cox in signalling the engine-driver to advance, nothing can be said in excuse for the dangerous and reprehensible practice of passing and repassing the engine across the only line of egress while the coaches and passengers are leaving the station.

I was present on two occasions of trains arriving, and I noted the time the engine took after starting from its station to reach the place where the accident occurred, (a distance of only 49 yards). In one case it was 18 seconds, and in the other 20 seconds, by far too short a time to warn a coach already in progress of its danger. According to Cox's evidence the engine was started at his signal, and from my two observations it follows, that within 18 or 20 seconds afterwards the coach was struck.

The coach was therefore in all likelihood already started when the signal was given, and a very slight degree of abstraction on the part of the coachman would account for the accident, without attributing it wholly to his recklessness. I must also observe that the circumstance of the Brilliant having already crossed the line (assuming Mr. Liquorish as correct in his evidence) is another favourable consideration in the case of the coachman; and certainly a very unfavourable one as regards the discretion of Cox the switchman.

Up to the time of the accident, it does not appear that any person was placed at the gate of the yard to control or regulate the departure of the coaches. The only person chargeable with this duty was the man at the switches. And he was at some few yards distance on the line, attending to his switch duty.

Since the accident an order has been issued, (which I subjoin), and a man appointed at the yard gate. By this order, as will be seen, the engine is still ordered to take away the second class carriages, and is then not allowed to leave its station till after the whole of the coaches have left the yard and the gates locked.

I am, however, of opinion, that it would be much safer and better not to allow the engine to move from its place of arrival till the yard is entirely cleared, or the gates closed. And that a person should be appointed to take charge of the road while the operation of shifting the carriages is going on in order thereby to prevent accidents to other persons whose business or curiosity may lead them to that part of the line, which is at present quite open to the public.

It may be proper to observe, that I noted the time employed, in transferring the carriages from the arrival shed to the station B, to transfer them thence to the up line, and for the engine to return to the switches at B. The whole operation occupied but three minutes, and this is all the time that is saved, by allowing the engine to make the first transfer of the carriages before the yard is cleared according to the new order; a very inconsiderable object, compared with the simplicity and safety of retaining the engine in its place of arrival till the whole of the coaches and passengers have passed over the rails as above suggested.

I have, &c.,

PETER BARLOW.

The Earl of Ripon,
&c. &c. &c.

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The following are the Statements of the Railway Servants made and taken down in writing at the Station.

William Jones, policeman on the platform.—On the 11th of this month, at the time the 3 hours 45 minutes train came down, I saw the engine take the second class carriages down the line and send them up on the other line. The engine then returned down the line again and I then heard the engine-man blow the whistle—a long continued blow; at the same time I saw the Exquisite coach with passengers both inside and outside leaving the station and proceed to the gate going out of the station, while the engine-man continued still to blow the whistle. The driver of the coach, whose name I have learned to be Johns, still persisted in driving across the line before the engine. When the wheels of the tender came in contact (she was backing) with the fore wheels of the coach and upset it. There was one of the passengers lying on the ground who was picked up and taken away. There was no other seriously hurt; they all walked away. The Exquisite was the first coach to leave the station. There were five coaches and two omnibuses to leave the yard.

Edward Early, foreman of the carriage porters.—Whilst I was forming the train, I saw a woman standing on the middle of the line and I warned her to go off, telling her of the danger she was in as the train would soon be down. This was three-quarters of an hour before the train arrived.

When the accident occurred she was safe off the line; she was injured by the coach; I warned her a second time to go away, but she still waited about the place. She was quite safe if the engine had not upset the coach.

I saw Johns' coach, it was the first out. He attempted to cross the line when the whistle was blowing and the tender not more than about 12 yards from him. I have warned him of crossing repeatedly. Had he not attempted to cross he would have been quite safe.

Benjamin Cox, switchman at the station.—I held up my hands and attempted to stop him both by hallooing to him and signing him off the line. The break was put on by the fireman when the men on the engine saw the coach would proceed. I had signalled the driver of the engine as to its being all right, and after the engine had started and was whistling as usual, Johns came out of the yard and attempted to cross the line. He seemed to hesitate before crossing the line and then when the engine was not more, I should say, than five yards from him, he proceeded across the line. I saw the tender strike the coach on the front wheels and throw the coach over. The tender drove the coach before it for, I should think, two yards before it capsized. Mr. Bruford was on the box and Mr. Slocombe was sitting behind Johns.

Mr. Robert Ashbee stated that Mr. Slocombe, who was on the coach, said to him after the accident, "No blame was attributable to the railway people; it was all Johns' fault, he would whip on."

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NOTICE.

Bridgewater, 12th September, 1841.

To prevent the recurrence of any accident to the stage coaches, carriages, &c., whilst crossing the line below the station, a man will be stationed at that place, whose duty it will be to keep all strangers clear of the rails, and to prevent anything crossing the line during the time the engine is engaged shifting the trains. He will also observe the following regulations and instructions with regard to the coaches, &c. leaving the station on the departure side of the line. After all the coaches, &c. shall have arrived for the purpose of taking passengers from a train the gates are to be closed and locked, and before anything is allowed to leave, the engine will take the open carriages from the train and lead them to the place where the porter in charge of them shall appoint; the engine will then take up her position abreast of the *lower carriage shed*, where she will wait until the gates have been opened, and all the coaches, &c. have left the station yard and cleared the line; the engine will then bring out the remaining part of the train and place it where directed; after all has been cleared away the engine will return to the engine-house.

The gates are not to be closed again until the coaches have arrived for a succeeding train.

Any person resisting the Company's men in the execution of their duty is to be apprehended, and will be dealt with according to law.

ROBERT ASHBEЕ, Superintendent.

To Engine Drivers, Police, and Porters.

It is proper to observe, that Mr. Ashbee at the time I was leaving Bridgewater, showed me another order he thought of issuing, differing from the foregoing however only in not stationing an extra man at the gate, thereby throwing the whole responsibility on the switchman, who was to have the key of the gate.

I do not consider it necessary to add this additional order to this report.

LETTER sent to the Great Western Railway Company, transmitting Copy of the Report of
• Professor Barlow, on the Accident at Bridgewater, &c.

SIR,

Board of Trade, 23rd September, 1841.

I AM directed, &c., to enclose a copy of Professor Barlow's report on the recent accident at Bridgewater, and to state that their Lordships entirely concur in considering the practice of passing and repassing the engine across the only line of egress, while the coaches and passengers are leaving the station, as dangerous and reprehensible, and that they strongly recommend the adoption of the suggestion in the report, that the engine should not be allowed to move from its place of arrival until the yard is entirely cleared of the coaches and passengers, or in case of any unforeseen contingency rendering a departure from this rule necessary until the gates are locked; and that a person should be appointed to take charge of the road while the operation of shifting the carriages is going on, in order thereby to prevent accidents to other persons whose business or curiosity may lead them to that part of the line which is at present quite open to the public.

I am further directed to request that this letter and Professor Barlow's report may be submitted to the Directors, and that their Lordships may be informed what arrangements are adopted at the Bridgewater Station.

To the Secretary of the Great Western
Railway Company.

I am, &c.,
S. LAING.

IN reply to Letter from this Office of the 23rd instant, with Copy of Professor Barlow's Report on the Accident at Bridgewater.

SIR,

Princes Street, Bank, 27th September, 1841.

I HAVE the honour to acknowledge your letter of the 23rd instant, which was submitted to a committee of Directors immediately upon the receipt of it.

They have given instructions that the subject of Professor Barlow's report should be further considered at a full meeting of the Board of Directors, which will be held very shortly, and in the mean time I have taken care that the yard gates at Bridgewater are closed and locked, so as to prevent any conveyance passing the line while the engine is in motion.

S. Laing, Esq.,
&c. &c.

I have, &c.,
CHARLES A. SAUNDERS, Secretary.

IN reply to Letters from this Office, enclosing Reports from Sir Frederic Smith and Professor Barlow on the Accidents, &c. on the Line. Also transmitting Report from the Company's Engineer relative to the state of the Line.

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Bristol and Exeter.Great Western Railway, Paddington Station,
11th October, 1841.

SIR,

THE Directors having now given their best attention to the several subjects which were brought under their consideration by the reports of Sir Frederic Smith, dated 10th ultimo, and of Professor Barlow, dated 20th ultimo, which you were good enough to transmit to me, I am desired to forward to you the copy of a letter addressed by the principal engineer of the Company to the Board, relating to those points which come more immediately within his department.

I am desired to express to you the gratification which has been felt by the Directors from the fair and reasonable description which has been given of the circumstances of the two accidents referred to, as well as from the candid and pleasing admission that they are not to be ascribed to neglect of due precautions on the part of the Company, or of their executive officers. I am to add that the Directors will pay willing and cheerful obedience to all the suggestions made by Sir Frederic Smith and Professor Barlow, on the several matters which relate directly to the recent accidents; it being, however, understood that, as regards the movements of the engine at Bridgewater after the arrival of the train, the regulation should be made to apply to the closing of the gates, rather than to clearing the yard, to which there can be no objection on the score of safety. Professor Barlow intimates that the saving of time can only be three minutes, which, if the operation of removing a portion of the carriages only and then waiting be intended, is correct; but as in some cases the engine removes the whole train at once and returns to the engine house in order to take in water, which may be indispensable, and if the order to restrain it from moving at all until the whole yard is cleared were to be put in force, the delay would frequently be from 20 minutes to half an hour. The Directors prefer closing the gates, and arranging that no engine shall move along the lines beyond the station, while the gates are open.

I am to refer you to Mr. Brunel's report on the subject of lighting and working the Box Tunnel, and to mention that the Directors coincide with him on those subjects.

I have, &c.,

CHARLES A. SAUNDERS, Secretary.

S. Laing, Esq.,
&c. &c.

COPY of Report from the Engineer to the Directors of the Great Western Railway Company.

18, Duke Street, Westminster,
5th October, 1841.

GENTLEMEN,

WITH reference to the recommendations contained in Lieutenant-Colonel Sir Frederic Smith's report of the 10th September to the President of the Board of Trade, I have great satisfaction in calling your attention to the fact that the several precautionary measures therein suggested have already been at various times under your consideration, and that nearly all are in operation.

As regards the constant examination of the line to ascertain its safe and good condition, not only is it almost the principal duty of the regular police, whose instructions clearly point it out (as remarked by Sir Frederic Smith), and over whom again are appointed inspectors, whose business it is to ascertain that the privates of the police understand and perform their duty, but also the assistant engineers who superintend the maintenance of the permanent way, or any other works going on, have discretionary power, and are required to place watchmen both day and night, but especially during the night, upon any part of the line that appears to them to require particular attention; these [men are selected from amongst the foremen of workmen acquainted with the work, are furnished with the proper signal lamps, and are placed in communication with the regular police. There are at present, and were at the time of the accident, about 20 of such extra watchmen at various parts of the line. Certainly at the point of the line where the accident did occur, the embankment, although of clay, being of no great height, not above 16 feet, of considerable width, with a slope of rather more than two to one, and up to that time no doubt having been entertained of its security there was no special watchman; but from such evidence as I have since been able to collect, in addition to that obtained by Sir Frederic Smith, I cannot think that the subsidence of the timber was the only cause of the accident.

I believe that some other and more powerful causes must have been in operation. The sinking of the rail to the extent stated is not sufficient to account for an engine and two carriages running off the line so violently as was here the case. Breaks, of course, as stated by Sir Frederic Smith, would have had no effect at all, even if self-acting, supposing such a machine to have been devised practically capable of application, the same blow or concussion which would have acted upon the break was that which produced the mischief, and actually destroyed that part of the carriage in which any such machinery would have been placed.

The consequences of this class of accident, where such unfortunately occur, are most likely to be entirely prevented or much diminished by great strength and stability in the construction and arrangement of the carriages.

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As the opinion of Sir Frederic Smith must necessarily and very justly carry great weight with it, I feel that I ought not to pass over one observation made by him without endeavouring to correct the erroneous impression which I think would be conveyed by it, and, under which impression, Sir Frederic Smith seems I think to labour even himself. He observes, "It was a piece of great good fortune that they (the engine and carriages) passed *between the lines*, for had they taken the opposite direction they would in all probability have gone over the embankment." Had such a fearful result been the probable consequence of the running off of trains (and there is at least an equal chance of their running off on the one side or the other, or on embankment or in cutting,) railway travelling would long since have been found a somewhat dangerous, instead of a very safe mode of conveyance, but out of the many hundred cases of trains getting off the line, I believe no instance has occurred of their running off an embankment; the fact is that both the engines and carriages immediately they leave the rails bury themselves in the ballast and are soon stopped, and particularly when the rails are fixed on continuous longitudinal supports, and there are no blocks or sleepers for the wheels to mount upon. When the engines or carriage wheels have dropped between the rails, it is almost impossible to drag or force them out, especially when the ballast is at all deficient, and thus the lateral distance to which the train is carried is generally very small. In the case of the accident referred to, where the engine ran inwards, it did not go off far enough even to interfere with the passage on the other line.

With respect to the deficiency of ballast along the line generally, I can assure you that every effort is made to keep up a good supply, but upon newly formed works, and while fresh ballast is being constantly required, the settlement and consolidation of the materials is extremely rapid; and, as the ballast can never be laid on in any great excess, as it would interfere with the packing, it necessarily follows that it will generally appear deficient, though by no means so much so as to diminish the safety of the line; no exertion shall be wanting to comply with Sir Frederic Smith's recommendation on this point.

With respect to the screwing of the rails, I have, in consequence of Sir Frederic Smith's report, had a return made to me of the number of screws in the different parts of the line, and I find that the rails, or rather the rail which particularly called for the remark made by Sir Frederic Smith, was a special (almost a solitary) case, which was known to my assistant, and has been marked and ordered to be filled up.

I now come to the subject of the Box Tunnel.

It had originally been determined, as mentioned by Sir Frederic Smith, to light this tunnel, and the lamps were made and fixed, and for a short time the attempt was persevered in.

I think Sir Frederic Smith saw some of the lamps tried; the attempt has been abandoned because it altogether failed. I should observe that I had never hoped to be able to produce any great effect towards lighting the carriages, this would require the walls of the tunnel to be whitened and strongly illuminated; my object was to throw a light on the rails both to assist the workmen engaged in packing, &c., and to enable the engine-men to see ahead. I soon found that the impurity of the air, whether from external fog and from the steam and vapours of the engines, rendered this quite impossible. At most times the lamps were of no use whatever, even to the men at work in the tunnel, and never to the engine driver, to whom of course it is necessary that, if he sees at all, he should see some considerable distance ahead; the lamps were therefore removed.

For the same reason no lamp has ever been used in front of our engines for the purpose of throwing a light ahead upon the line, and I am not aware that this has ever been successfully practised by others.

It must be a much more powerful lamp than any of those hitherto used for the purpose, that would, under ordinary circumstances, illuminate the road to a distance of 150 yards, yet this distance being traversed in about 10 seconds would be much too short to be useful, and the glare of the lamp thrown upon the foreground would unquestionably render the distance less clear, and in foggy or rainy weather quite invisible. The lamps in front of the engines are used merely as signals.

I am afraid that there are no means of remedying the evil of darkness in tunnels, (the extent of which evil, however, is this, that the tunnel is during 24 hours as dark as the rest of the line frequently is during the night, but is otherwise exposed to fewer casualties) unless by a general and brilliant illumination, which would of course be very costly.

With respect to the question of pushing or pulling a train up an inclined plane, it is by no means so simple a one as it may at first appear.

If the plan at present adopted were really attended with danger in the ordinary sense of the term, and this danger could be materially diminished by a delay of a few minutes, the subject would hardly have been discussed. The safer course would have been adopted at once by the Directors without hesitation, but the facts are these, that upon short inclined planes which are generally nearly straight, the practice has been to push.

Upon the Birmingham and Gloucester Railway only as far as I am aware has the opposite plan been pursued; the assistant engine is attached in front; but in the first place it is to be observed that the inclination of the plane is so great that the leading engine might very frequently be incapable of taking itself up, and therefore it may be very advisable to place the small-wheeled assistant engine in front. And secondly, that the mode of getting rid of the assistant engine at the top is not by any means free from objection. This system has been in operation only about 12 months.

Now on the Liverpool and Manchester Railway there are two such planes which have been worked by a bank engine pushing behind for upwards of ten years; probably upwards of 100,000 trains have passed up these two inclines, yet I am not aware of any accident having ever occurred from the pushing.

On the Croydon the same plan has been followed for about two years. All past experience therefore is in favour of this system; and although by no means prepared to give an opinion in favour of this over the other plan, or to say whether other means which have been brought under your consideration may not be preferable to both; neither am I prepared at the present moment to recommend you to alter the system now pursued. I feel that in giving my advice upon this subject, I am placed in a very embarrassing position by the doubts raised by Sir Frederic Smith, and the increased responsibility thus nominally thrown upon the Directors, should they adhere to the present plan; and doubtless they would be much blamed by the public if any accident should now occur, which could be supposed to be caused by it, although it might really be the best and safest plan, simply because they had been cautioned against it, but although the burthensomeness of the responsibility of adhering to the plan which has been adopted from the best motives may be thus increased, the real responsibility for any consequences of a change unfortunately are by no means diminished, but would rest I apprehend as exclusively and as heavily as ever upon the Directors, notwithstanding that they might be following the implied advice of the Board of Trade.

It is a singular coincidence, and I refer to it only as such, that the accident which is the real subject of this report did occur upon an inclined plane, and contrary to our usual practice with two engines coupled together in front; while it does also so happen that, if the second engine had been behind, no evil would have resulted to the train, and I believe most likely not to the engine either. Now if this accident had occurred after the Directors had adopted this mode of connecting the engines, in consequence of the suggestion of the Board of Trade, would their responsibility have been less, or would the Board of Trade have relieved the Directors of any part of the painful feeling arising from a sense that the accident might be attributable to their having given up their own opinion of what was best from the fear of the inconvenience of opposing the views of the Government.

The appearance of the Chippenham embankment referred to by Sir Frederic Smith is already much improved. That part which may have seemed deficient in width at the top is in fact formed of stone, and is one of our most solid embankments, and is at the base and up the slopes of ample width, but the upper edge had been left unfinished at a point where a temporary inclined plane had been carried up, and although really safe was unsightly, and may very naturally have led Sir Frederic Smith to suppose that the embankment itself was narrow; this is in course of being remedied, and I trust that when Sir Frederic Smith next sees it, he will be satisfied with it.

I am, &c.,

J. K. BRUNEL.

To the Directors of the Great Western
Railway Company.

No. 11.

LONDON AND BRIGHTON RAILWAY.

REPORT of Professor Barlow on the Accident of the 2nd instant. Also, on the falling in of the Patcham Tunnel.

MY LORD,

Woolwich, October 15, 1841.

IN compliance with your Lordship's request, contained in the instructions forwarded to me by Mr. Laing, I proceeded on Wednesday, the 6th instant, to Brighton, having on my way arranged with Mr. Statham, the superintending engineer of the line, to meet him at the Brighton Station on Thursday morning, to proceed up the line by a special engine immediately after the despatch of the 10 h. 45 m. morning train.

This I did accordingly, but, as your Lordship has been already informed, on our approaching the south end of the Patcham Tunnel a signal was made to stop, and on inquiring the cause we were informed of the dangerous condition of the front of that structure, which was obviously in a falling state. Of course I did not proceed, but returned to Brighton with the engine, leaving Mr. Statham at the tunnel. In a short time afterwards it appears that the front and a great part of the wing walls came down. Before I left the tunnel a person was dispatched to the other end of it to warn the down train not to advance, and my arrival at the Brighton Station prevented the dispatch of the 11 h. 45 m. train. The Patcham Tunnel is about two miles and a half from the Brighton terminus. Steps were immediately taken to remove the rubbish, and by the next morning the line was again opened.

This new disaster prevented my inspection of the Copyhold cutting, where the fatal overthrow occurred on the second instant, till the next day. I was then supplied with a special engine and carriage, and was accompanied by Mr. Rastrick, the engineer-in-chief of the line, to the Hayward Heath Station; our driver being the man Jackson, who had charge of the second engine on the day of the accident, and whom I had thus the means of questioning on the spot, as I had also the labourer Copley, who had made the signal to indicate the necessity of caution the moment before the first engine was thrown off the line. I also saw at a beer-shop the guard Hitchens, who was so severely injured, but he was too ill to be able to give me any information. I saw this man again the next day; he then appeared better, but could give me no account; all that he knew was the accident was momentary. The driver of the first engine, Goldsmith, I only saw at the Brighton Station. Although in a weak state he is fast recovering, but his evidence amounts to little more than that of Hitchens. He saw the signal given by Copley, but too late to be of any service. He states the speed to have been, on entering the cutting, about 30 miles per hour, but could assign no cause for the accident.

On examining the place of the fatal occurrence nothing could be seen, or expected to be

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seen, after the lapse of six days, to indicate its immediate cause, although there was sufficient evidence of the extreme violence of the concussion. Four of the rails, weighing 75 lbs. per yard, or 375 lbs. each, which had sustained the shock of the engine, were bent and twisted in all directions, and one of them had on one side its flange stripped off for about two feet of its length, as if cut by the most powerful shears; but these rails having been replaced by others immediately after the accident, I could form no opinion from the appearance of the road that could lead me to any conclusion, although from other circumstances I feel not the slightest doubt on the subject.

The place where the accident occurred is near the 36½ mile post from London, within about a mile of the north end of the Hayward Heath Tunnel, which is a little below the Hayward Heath Station. The soil in this cutting, and for some distance down the line, is of a very absorbent and treacherous character, becoming in its wet state nearly semi-fluid, and yet when dry or well drained it appears to be perfectly sound; and I am bound to state that I stood at this place and observed trains passing with considerable speed both up and down the line, and that their motion was exceedingly steady, that is, free from rocking, which is generally so obvious where a line is defective.

I have watched this effect, and have experimented upon it on several lines, and I am not aware that I ever saw less oscillatory motion. But it must be observed that at this time every thing that could be done had been done to carry off the water. For a day or two before the accident the rain had been very heavy, and I have no doubt, from the nature of the soil, and the evidence of Copley, that the road was at the time in what he describes "as a light state," which he afterwards explained by saying—when there is much rain the wet pushes up the rails and makes them uneven, but that was not the case on Saturday.

I asked him, "If the road was not in that state on Saturday, and the speed not greater than usual, why he gave the signal;" but all I could learn was they had done so for two or three days.

Weighing these circumstances, viz., the nature of the soil, the great quantities of rain that had fallen, the admission that a caution signal was made, and had been made for some days before, I feel no doubt whatever that the unsound bearing of some one or more of these sleepers at the time was one cause of the accident.

With respect to the speed of the engine at the time, there are considerable discrepancies in the evidence. Jackson, the driver, states that the speed did not exceed 20 or 23 miles per hour, although he admits that he has frequently passed this spot at 32 and 35 miles per hour.

Copley, the labourer above alluded to, says, that he observed the engine at its usual speed. Hinge, the policeman on the viaduct, says he gave the signal "steady," because he observed the train was going rather faster than usual. Now the question is, what has been the usual speed on this part of the line. The average speed on the whole line for this train is 25 miles per hour, including the time lost at four intermediate stopping places, besides the stoppage at Horley to attach the assistant engine.

This will require an average speed of at least 28 miles per hour when travelling. Now for the first two miles after leaving Horley the line ascends 1 in 460, and then for four miles before reaching the Balcombe Tunnel it ascends 1 in 264, and thence descends for nearly six miles to the Hayward Station at the same rate, that is 1 in 264.

From the notes and memoranda made by Sir Frederic Smith and myself in travelling together over some thousand miles of railway, and over every variety of gradient. I have no doubt that to preserve an average speed of 28 miles per hour through this 12 miles would require a speed of 32 miles per hour on the descending side.

Now it is admitted that the train was behind its proper time, a strong reason for not going slower than usual. Jackson denies having seen the signal "steady" on the viaduct, he seems therefore to have had no good motive for going slower, and he states that he has frequently passed this place at 35 miles per hour; and yet he asserts that just on this particular occasion, when such a frightful accident occurred, he was not proceeding at more than 20 or 23 miles per hour. His statement on this head is certainly supported by the opinion of John Hardy, Esq., M.P., who was a passenger, but it is greatly at variance with probability, and with other evidence.

It has been seen that the usual speed down this plane is about 32 miles per hour, and Hinge admitted in his evidence before the jury that he thought the speed was greater than usual. It appears also that he made use of expressions soon after the accident, which would imply that the speed was much greater than he stated before the coroner.

Since I have been engaged on this inquiry, I have had communication with two of the gentlemen on the jury, who met me afterwards by appointment, and whose statement throws great doubt on this man's evidence. I quote the following from their two letters.*

"I beg to state that, although on the evidence brought before them the jury could come to no other conclusion than that at which they arrived, I felt, and still feel, by no means satisfied at the statement made by John Hinge, the policeman, on the highly important point of the speed with which the train was travelling at, or immediately before, the time of the accident. I was at the Copyhold bridge about two hours after the accident happened, when this policeman addressed me and said, that when he first saw the train coming towards him he was sure something would happen from the speed at which it was going. He said he held up his hand to signal 'steady,' but that his heart was up in his mouth as they passed him; that he ran to a point in the road where he could watch them farther, and in a very short time the accident occurred. He was heard to state this by other persons also, who have, I believe, informed you

* I transmit the original letters of these gentlemen with the report.

of the same thing.* The man, however, when called as a witness denied having made any such statement. Whether he had really forgotten what he previously said, or in the excitement and alarm occasioned by the accident had stated that which was not the fact, I am unable to say; but it is obvious that the effects on the minds of the jury would have been very different if the original account of the policeman had been substantiated before them."

The other gentleman states as follows:—"Soon after the accident occurred I went to the spot, and accompanied one of the inspectors and a gentleman, who is a stranger to me, to the shed where the bodies of the unfortunate victims had been deposited. A policeman was in attendance, who volunteered the following remarks:—He said that he observed the train approaching him near the viaduct (where he was on duty) at such a rapid rate that he was much terrified; that he fully expected some accident to happen in consequence of the great speed with which they were proceeding, and was only surprised it did not occur sooner than it did; that he held up his hand as a signal to slacken speed, but that no notice was taken of it. Being one of the jury on the inquest held two days after, I insisted upon this man's evidence being heard. It was not until after much delay had taken place, and the coroner more than once called for him, that he made his appearance. On questioning him as to his former statement he totally denied having used such expressions as those which I had attributed to him, declared that he had not been the least frightened, nor had entertained any apprehension of fatal consequences arising from the speed, which he then said was not extreme; yet he allowed that he held up his hand as a caution, but could not be certain that the signal had been seen by the driver.

"As a jurymen I did not think that I could also act as a witness; and not being aware at the time that the policeman had made similar statements to others, who could be called upon to give evidence of the fact, I thought I ought not to allow the policeman's previous assertions to influence the verdict, as they were not borne out by the evidence. But as it appears that Government has commissioned you to investigate the circumstances which attended the accident, I feel that, being no longer fettered by my position as a jurymen, I should not be acting fairly towards the public if I withheld this statement from you."

These gentlemen, who have no wish that their names should be unnecessarily brought before the public, are, notwithstanding, quite ready, if called upon, to substantiate what they have thus stated.

It is not, perhaps, my place to make any comments in this report on the conduct of the policeman; but it is impossible not to conclude from these statements, and other circumstances, that the speed down the plane was excessive, and inconsistent with the then state of the road; or, perhaps, with common prudence under any circumstances.

Of course the above statements impugn also Jackson's evidence; and I am sorry that the jury seem to have given too much weight, in my opinion, to his explanations as to the probable cause of the accident. This man states that he has been a driver for four years and a half, three years in the service of the London and Brighton Company, before which he belonged to the London and Birmingham Company.† He states that he never met with any accident himself from the four-wheeled engines on the latter line; but had heard of a case of one of those engines getting off the line near Harrow.

Now surely this is very slight ground on which to come to a conclusion that such engines are unsafe, and for attributing to the use of them two accidents on two successive days within about a mile of each other.

It appears from a statement I have received from Mr. Bury, the maker of these engines, and who is also the superintendent of the locomotive department of the London and Birmingham Railway, that since the opening of that line, in July, 1837, they have used no other than four-wheeled engines; that they have travelled more than three million miles, which is nearly equivalent to making thirty thousand complete journeys between London and Birmingham; and that they have in no instance met with a single accident that can be said to have been occasioned by the particular construction of the engine.

There is, however, as stated by Jackson, some difference between the Birmingham and Brighton four-wheeled engines. They have both the same stroke and the same diameter of wheels; but the former has smaller cylinders, viz., some having twelve-inch cylinders, weighing, full of water, under 10 tons; others of thirteen-inch cylinders, weighing, under like circumstances, between 11 and 12 tons.

On the Brighton line the four-wheeled engines have all fourteen-inch cylinders, and weigh, when charged with water and fuel, between 13 and 14 tons.

This increased size of cylinder requires increased dimensions; and, the wheels being of the same diameter, necessarily raises the centre of gravity, and thus far they may be said to be more top-heavy, and are, perhaps, more liable to rock; but the difference must be very inconsiderable.

In order to form some comparison of the top-heaviness of the two engines employed on that particular day when the accident occurred, Mr. Rastrick obligingly permitted one of his assistants to make me two outlined elevations of them, that is, of a four-wheeled engine of precisely the same dimensions as that which was destroyed, and the other of the identical six-wheeled engine driven by Jackson. I forward with this report these two drawings,‡ by

* I have received a letter from a gentleman, dated October 14, from Clare Hall, Cambridge, who bears testimony to his being present and confirming every word as above related; he has not requested me to withhold his name, but one of the other gentlemen having done so, I have thought it best to follow the same course, by not giving it.

† I have ascertained that both Jackson and Goldsmith were discharged servants of the London and Birmingham Company, but Goldsmith had never been a driver.

‡ It may be proper to observe that the draftsman has for some reason omitted to introduce the frame of the four-wheeled engine, which, at first sight, gives it the appearance of a top heaviness it does not possess.

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which it will be seen, as nearly as it is possible to form an opinion, that there is little or no difference in the place of the centre of gravity in the two engines. The upper part of the boiler of the six-wheeled engine is the highest, but its water line is the lowest; as far, therefore, as relates to top-heaviness, on which much stress is laid by Jackson, I am of opinion there is little or no difference.

In making these remarks, I beg it may be distinctly understood that I am not advocating, or giving a preference to, the four-wheeled engines. My object in referring to the subject is, that the jury, by giving too much weight to what I consider to be an erroneous opinion, have lost sight of the main causes of the accident, which I feel the strongest conviction were over-driving and a road partially injured by the heavy rains that had recently fallen. I think, moreover, that the withdrawing of those engines from the line, in compliance with the recommendation of the jury, has a tendency to give a false confidence to the Brighton passengers, while it is calculated to give unfounded alarm to those travelling on the London and Birmingham and some other lines.

It now only remains, my Lord, to inform your Lordship of the result of my examination into the circumstances attending the falling of the front of the Patcham Tunnel. This was, I believe, occasioned by the chalk being left at a considerable slope, which caused the "backing in," when impregnated with the excessive heavy rains, to slide along the face of the chalk, and thus by its pressure overcoming the resistance opposed to it. Mr. Rastrick also apprehends that a pipe, intended for a drain, had become by some means choaked, which increased the evil. A slight crack, it appears, had been observed early on the Thursday morning; but no danger was apprehended till immediately after the passage of the 10h. 45m. morning train.

In the fall of the front of the tunnel, a part of the brickwork of the tunnel itself, for about six feet, was fractured. It remained shored up the second day, but was removed during the following night. The remaining part is an extremely fine piece of brickwork, and is perfectly safe, only requiring for the present a constant watching, to remove any fragments of chalk that may fall upon the line from the present nearly vertical face of the cutting. Steps will be immediately taken to reface the tunnel; and it is, I believe, Mr. Rastrick's intention to lengthen the brickwork of it a little towards Brighton.

In the further compliance with your Lordship's instructions, after making this examination I proceeded along the line with the special engine and carriage, accompanied by Mr. Rastrick, to Hayward Heath, stopping and examining everything that appeared to require it. Mr. Rastrick here left me to return to Brighton, having first appropriated to me the coupé of the carriage, in which I proceeded to Croydon; and if I might venture to give a practical opinion relative to the construction and present state of the line, I should say that the engineer has done, and well done, everything that could be effected; but he has had to deal in some parts with very treacherous materials, and time will be required for them to take up a firm and solid state. In other parts, where the soil is better, the line is very perfect. The bridges, the viaducts, and four out of the five tunnels, are, in regard of interior brickwork, in perfect condition; but the Hayward Heath Tunnel is much oppressed with water from the late excessive rains; but great efforts are being made to carry the water off, and a few days of fine weather will enable much to be accomplished. Those parts of the line which have suffered most from the rains are two short pieces of the embankment south of the Redhill Station; another considerable portion south of the Balcomb Tunnel, and just beyond the Hayward Heath Tunnel southward.

Sir Frederick Smith, in his general approval of this line, has drawn the attention of the engineer to certain portions of it, on which he conceived the safety of the public called for specific precautions and reduced speed. These precautions have been rendered more particularly necessary in consequence of the recent heavy rains, which have also produced some other weak points; and I conceive that it is most desirable that at present, and during the approaching winter, more time should be allowed for the journey, in order that great caution may be observed in those parts where the line has most suffered.

I have, &c.

PETER BARLOW.

The Earl of Ripon,
&c. &c. &c.

LETTER from Lieutenant-Colonel Sir Frederic Smith, covering Professor's Barlow's Report, on the Accident on the London and Brighton Railway.

MY LORD,

Board of Trade, October 15, 1841.

HAVING carefully considered the accompanying report from Professor Barlow, respecting the late fatal accident on the London and Brighton Railway, and on the present state of the works on that line, I have the honour to acquaint your Lordship that I concur with the Professor in attributing that accident partly to the excessive speed used on the occasion in question, and partly to the defective state to which the road had been reduced by the long continuance of heavy rain; but, believing as I do, that these two causes mainly contributed to produce this unfortunate catastrophe, yet I am most decidedly of opinion that the accident would not have happened but for the improper use of two engines a-head on a long gradient, of rather severe inclination, falling in the direction in which the train was running.

Scarcely any practice can, in my opinion, be more imprudent than running a train with two engines a-head on such a plane at a high velocity, even over a road well consolidated by time, and the danger of such a proceeding is obviously most fearfully increased when it is permitted

on a line which has not acquired that degree of steadiness which is attainable only from long use; and, while this practice is dangerous, it is not only altogether unnecessary, but expensive to the Company.

Your Lordship will readily perceive the utter impossibility of two drivers, however dexterous they may be, so regulating the speed of their respective engines, on such a plane as that on which the accident occurred, that they shall keep the "draw chains" of both uniformly stretched, and it is quite clear that when the leading engine sometimes draws the other, and is sometimes pushed by it, an irregular motion must result, having a tendency to disturb the balance of the leading engine, and more especially if that engine be the lighter, and carried by only four wheels. The risk is much increased on a line where the evenness of the rails has been disturbed by bad weather.

In calling the attention of the London and Brighton Company, therefore, to the necessity of a considerable reduction in their rate of speed on the falling gradients, and of paying constant and close attention to the state of their road, I would recommend that they should be urged to discontinue the use of the assistant engine in the descent of their long inclined planes.

A most important and very safe practice prevails on some of the northern railways, which should be immediately introduced on the Brighton line, and ought to be adopted on all those of recent formation, as it affords an excellent, constant, and almost unerring check on the contractors, who are generally held responsible to maintain the road in good order for 12 months after the opening.

The practice to which I allude, is that of making each policeman carry a gauge, and walk over his beat, before the arrival of every train, trying the gauge of the rails in such a number of points as to ascertain whether the line is throughout in perfect order; and it is the policeman's duty to stop a train, or give the signal of caution, according to the degree of risk he may discover.

I find that the point where it is presumed the engine first became irregular in its motion, just before the accident, is one to which I had called the especial attention of the Company, as requiring careful and cautious driving and watching.

Professor Barlow very justly observes, that it will be the case on the London and Brighton, as it is on all new lines, that for some time to come fresh weak points will be produced by unfavourable weather, and I therefore conceive it will be proper not only to press upon the Company the necessity of devoting the most vigilant and unremitting care to the state of their works generally, and of the permanent way in particular, but that it will be indispensably necessary that this line, on which so large a traffic may be expected, should have the especial attention of this department, and be occasionally inspected during the winter after bad weather, in order that such suggestions may from time to time be offered to the Company as may relieve the Board of Trade from all responsibility as regards the public safety on this railway.

The Earl of Ripon,
&c. &c.

I have, &c.,
FREDERIC SMITH.

LETTER sent to the London and Brighton Railway Company, with Extracts from Sir F. Smith's and Professor Barlow's Reports.

SIR,

Board of Trade, October 19, 1841.

WITH reference to the late accident on the London and Brighton Railway, I am directed, &c., to inform you that their Lordships recommend to the Directors of the London and Brighton Railway Company the adoption of the following precautions, which have been recommended by Sir F. Smith and Professor Barlow:—

1. That the speed in descending the long inclined planes upon the line, and also upon all portions of the line which may appear to be not perfectly consolidated, should be reduced, and strict orders issued to prevent such limited rate of speed as is thought proper for safety from being ever exceeded.

2. That with a view to this the time-table should be revised, and the average rate of speed along the line, which is stated by Professor Barlow to be in some case as high as 25 miles per hour, should be considerably diminished.

3. That the practice of running trains with two engines a-head *down* long inclined planes, should be discontinued.

Sir F. Smith further suggests, that a practice which prevails on some of the northern railways might with advantage be adopted, as affording an excellent check on the contractors, who are responsible for maintaining the road in good order, viz., of making each policeman carry a gauge, and walk over his beat before the arrival of every train, trying the gauge of the rails in such a number of points as to ascertain whether the line is throughout in good order, and making it his duty to stop or caution trains according to the degree of risk he may discover. Their Lordships recommend this suggestion for the consideration of the Directors.

To the Secretary of the London and Brighton
Railway Company.

I am, &c.,
S. LAING.

IN reply to Letter from this Office, of the 19th instant, also requesting a Copy of Professor Barlow's Report.

SIR,

10, Angel Court, Throgmorton-street, October 20, 1841.

YOUR letter of 19th instant has received the consideration of the Directors of this Company, and I am desired to assure you, for the satisfaction of the Lords of the Committee of

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Privy Council for Trade, that the precautions therein suggested will meet with due attention.

I am at the same time instructed respectfully to request that their Lordships will be pleased to direct that a copy of the report of Professor Barlow be furnished to the Board of Directors of this Company, as the circumstance of its not being promulgated tends greatly to keep alive the excitement which the public mind sustained by reason of the late calamitous accident, and several proprietors who have applied for it, have either imagined that the Directors were possessed of, and wished to suppress it, or have drawn unfavourable conclusions in respect of its non-publication.

I have, &c.,
 THOMAS WOOD.
 Secretary.

S. Laing, Esq.,
 &c. &c.

LETTER sent to the London and Brighton Railway Company, with Copy of Professor Barlow's Report on the Accident on the 2d instant.

SIR,

Board of Trade, October 29, 1841.

IN reply to your letter of the 20th October, requesting that the Board of Directors of the London and Brighton Railway Company may be furnished with a copy of Professor Barlow's Report to the Lords, &c., on the recent accident on the London and Brighton line, I am directed by their Lordships to inform you that, although, as a general rule, they consider the reports of their inspectors as confidential, yet, as it is stated that in the present instance unfavourable consequences are likely to result to the Company from the report being withheld, their Lordships have decided on complying with the request.

I accordingly enclose a copy of the Report.

To the Secretary of the London and Brighton
 Railway Company.

I am, &c.,
 S. LAING.

REPORT of Lieutenant-Colonel Sir Frederic Smith on his inspection of the Merstham Cutting on the London and Brighton Railway, with reference to the Slip which occurred on the 28th instant.

MY LORD,

Board of Trade, Whitehall, October 29, 1841.

THE traffic of the London and Brighton Railway having become interrupted by a slip which took place the night before last, in one of the sides of the Merstham cutting, I have this day, in conformity with your Lordship's general instructions, inspected the works on that part of the line.

The Brighton Railway crosses the Merstham hill by a tunnel, of above one mile in length, and by two cuttings. That on the north side of the tunnel being $1\frac{1}{2}$ of a mile long, and that on the south side about half a mile.

The slip took place on the eastern side of the north cutting, and nearly adjoining the mouth of the tunnel. Here the height from the level of the rails to the natural surface of the ground is about 110 feet, divided into two slopes; the lower slope, which is entirely in chalk, being 70 feet deep, and battering about three inches in the foot, and the upper, which is 40 feet deep, and partly in gravel, being at an angle of 45 degrees.

At the junction of these slopes there was what is called a large pot-hole, filled with gravel, which, having become saturated with water during the late rains, thrust out the chalk face of the slope for a length of about 30 yards, and a thickness of between four and five feet. Although the mass thrown down was very inconsiderable, yet, owing to the height of the cutting, as compared with its breadth, it has been sufficient to cover about 30 yards in length of both lines of rails. If the weather had been favourable, and the work had been pressed forward, the whole of the rubbish might have been cleared away in a few hours, but this has not been thought necessary, as the temporary interruption merely causes some slight inconvenience to the passengers, and expense to the Company, who furnish the means of conveyance between the points where the trains are obliged to stop. This interval, owing to the length of the cuttings and tunnel, is about four miles. The line is to be opened throughout on Monday next.

I carefully examined the whole of the north cutting, and I find that, with the exception of the slip in question, its shows scarcely any symptom of having been affected by the late heavy and continued rains, nor by the severe frost of last winter, and therefore it is questionable how far it may be proper for the Board of Trade to interfere; but, looking at the great inconvenience that would result from any protracted interruption of the traffic, and the loss that would in consequence result to the Company, as well as the risk it might occasion to the traveller, if any heavy slip were to take place, I am disposed to recommend, notwithstanding that the cuttings on the whole stand well at present, that an increase be given to the batter of the lower slope; and probably the best way of doing this will be to form both slopes into one. It strikes me as being a mere question of first expense, for although no serious evil may result from allowing the cutting to remain as it now is, still it is very probable, especially after being saturated by the excessive rain of this autumn, that portions of the steeper slope, on being acted upon by frost, will gradually peel off, and cost in the removal even more than if cut down in the first instance.

In my journey to the Merstham cutting, I observed that some parts of the Godston road embankment, which, in my first report on this line I stated would require to be worked with care, had subsided a little. Under these circumstances, although the settlement is at present unimportant in itself, yet, as an indication of the effect the rain may have in doing greater mischief, I beg to repeat my warning of the necessity of its being most carefully watched.

I also remarked some very heavy slips in the cutting of the Croydon inclined plane, and that, notwithstanding the slopes are extremely flat, the ground which has given way has encroached so much on the bottom of the cutting as to be touched by the steps of the carriages as the trains pass. I would therefore recommend that the greatest care should be used by the drivers of all the trains in running down this plane, especially after dark; and that until the present movement of the slopes shall appear to be arrested, extra policemen should be employed on this part of the line, to examine and ascertain its safety before the passing of every train.

I have, &c.

FREDERIC SMITH, Lt.-Col. R.E.,
Inspector-General of Railways.

The Earl of Ripon,
&c. &c.

Appendix.

II.
Reports on
Accidents.

No. 11.
London
and Brighton.

No. 12.

SOUTH-WESTERN RAILWAY.

REPORT of Lieutenant-Colonel Sir Frederic Smith, on the Accident which occurred of the 16th October.

MY LORD,

Board of Trade, Whitehall, 1 November, 1841.

PURSUANT to your Lordship's orders, I have this day inquired into the accident that occurred on the South Western Railway on the morning of the 16th ultimo, by which the guards of the mail train from Southampton were injured.

This accident was caused by the collision of the mail with some goods-waggons which had been left on the main line near the Kingston station.

The circumstances connected with this collision were inquired into very fully and carefully by Mr. Martin the engineer, and superintendent of the South Western Railway, immediately after the occurrence; and having seen the evidence collected with great ability by that gentleman, and personally examined all the material witnesses, I have arrived at the same conclusion that I find he has done, namely, that the parties chiefly culpable are the engine-man, fire-man, and two guards of the mail train.

It appears that a goods-train, drawn by the Vivid and Wizard engines, and consisting of 13 loaded waggons and a first-class carriage left Southampton at 9 h. 45 m. P.M., on the 15th ultimo. Several other loaded waggons were added to the train at different stations on the journey, and on arriving at Woking it had increased to 30 waggons. It left that station at forty minutes past two, being then two hours and a half after time.

The cause assigned by the engine-driver of the Vivid for the delay on the journey was the slippery state of the rails, owing to the rain, and the defective condition of the Wizard engine; and the driver of the latter confirms this account.

Between the Esher and Kingston stations, (which are two miles apart,) and within about half a mile of Kingston, the Wizard engine is stated to have become unable to draw any part of the load, and therefore William Anwall, the driver of the Vivid, detached both engines from the train, and proceeded with them to Kingston, where the Wizard was placed in a siding. He then returned with the Vivid, and finding that this engine was incapable of drawing more than 12 waggons, he started with that number for London, leaving the remaining 18 on the main line.

Henry Edes, the guard of the goods-train, who, according to the regulations of this company, was the responsible servant on this occasion, accompanied the 12 waggons, leaving the breaksman, Thomas Fletcher, in charge of the 18, with instructions to go back with his hand signal lamp to Esher station, in order to stop the mail train at that point, and direct the engineman to transfer his engine and the carriages by the crossing at the Esher station from the up to the down line, to avoid a collision with the goods-waggons; and Fletcher was further to desire the driver of the mail engine to recross to his proper line, after passing beyond the waggons and reaching the Kingston station.

The breaksman, Thomas Fletcher, states that he obeyed this order by going 50 yards beyond the Esher station, where, on seeing the mail train approaching, he waved his red lamp violently to attract the attention of the engineman, fireman and guard, but unsuccessfully, as the train passed him without diminishing its speed, and apparently without his being noticed by any person upon it.

There is not only the evidence of Edes and Fletcher, and also of a respectable farmer of the name of Thomas Fowler, to prove that a tail lamp had been left attached to the hinder waggon of the goods-train, but there is also the testimony of Andrew Brooks and Joseph Batten, belonging to the metropolitan police, V division, showing that the light was burning at the time the mail ran up to it; and one of these men is ready to swear that he saw it distinctly at the distance of half a mile.

On the other hand, David Maitland, the engineman, and Charles Jervis, the fireman, deny that there was any tail lamp burning, and assert that they did not perceive the waggons until within 150 yards of them, when they blew the whistle, shut off the steam, reversed the engine, and applied the break, but were unable to stop the train in time to prevent the collision.

No. 12.
South Western.

Appendix.

II.
Reports on
Accidents.No. 12.
South Western.

The guards of the mail train, Edward Moriarty and James Harrison, assert that they were on the look out, but neither saw the hand signal of Thomas Fletcher, nor the tail lamp of the goods-train, and they both state that immediately on hearing the steam whistle they applied their respective breaks, and assisted in diminishing the speed of the train.

The evidence of three disinterested persons that the tail lamp *was* attached to the hinder waggon, and that it was burning with sufficient brightness to have attracted the attention of the driver and fireman of the train, had they been vigilant, appears to me to be conclusive on that point; and although it may be less unquestionable, from his being, in some degree, a party implicated, we have the evidence of Fletcher, both as to his having left the tail light burning, and as to his having waived the signal lamp at Esher, not only as the train approached, but also after it had passed him, and therefore it is impossible to acquit the four servants who were with the mail train of gross negligence.

Had the collision proved fatal to any of the passengers, I do not see how a coroner's inquest could have returned any other verdict than one of manslaughter against the engineman and fireman; and feeling as I do that if in a case, such as the present, where the lives of the passengers have been placed in great jeopardy by the gross misconduct of these men, a public example is not made of the offenders, the security of railway travelling will suffer a severe shock; I think that Maitland and Jervis should be prosecuted by the company.

The guards, although highly culpable, are not equally so with the engineman and fireman, because from the construction of the guards' boxes they cannot keep a constant look out a-head, without sitting in a very constrained and distorted posture; and, although this does not free them from all blame, still it is in some degree an extenuation of their want of vigilance in not seeing the tail lamp; but then they ought to have seen the hand lamp of the breaksman Fletcher, and therefore their neglect should be visited with the marked displeasure of the directors.

I would, however, recommend that the guards' seats on this railway should be altered as I have suggested to Mr. Martin.

Had the guard of the goods-train exercised properly the discretion vested in him, he would not have left any waggons on the main line, but removed them to the siding at Kingston after the Wizard engine was placed there. The code of regulations should strictly forbid any waggons being left on the main line, and should distinctly specify that in the event of an engine becoming incapable of drawing the whole train on any part of the line, those carriages and waggons that cannot be taken to their destination should be placed in a siding with their breaks down, and properly scotched.

The best mode of giving great brilliancy to railway lamps has of late been a subject of anxious inquiry in some companies. It is one of great importance, and I doubt not that the collision now under consideration will draw more closely the attention of the managers of the South Western to this matter.

I would desire to see pressed upon them the expediency of two tail lamps being used with every train. On the York and North Midland, at my suggestion, after the fatal accident of the 11th November, 1840, at Taylor's Junction, the Directors ordered the usual tail lamp to be continued, and a second red lamp to be placed on one side of the hinder carriage, nearly on the level of the roof.

The London and Birmingham have not only followed that example, but they have added another lamp on the opposite side of the roof, so that three red lamps are now attached to the hinder carriage of every train after dusk on that railway.

I should be glad to see one or other of these plans followed on the South Western railway.

It may, however, be doubted whether any light would have aroused the attention of the engineman Maitland, or his fireman Jervis, who, I suspect, must have been in a state of great drowsiness; and the question naturally arises, what would have been the most effective way of drawing the attention of men under such circumstances, or in foggy weather, and I am inclined to believe that the "puppets," tried by Mr. Bury on the London and Birmingham line, would best answer the required object. They are fixed to the rail at the place where it is required to attract the notice of the engine driver, fireman and guard, and as the engine passes it touches a lever, by which a steam whistle is sounded, and a red light which is attached to the engine is turned full on the face of the driver, so that all parties may be aroused, and the driver and fireman carry with them, in this red light, an evidence that a signal has been given to them.

The only argument which occurs to me that could be urged against this plan is, that delicate machinery is likely to get out of order, and will not be efficient when required. The answer is, that the machinery is not so delicate as to be very liable to such casualties, and that if it should fail when wanted, there is still the policeman, or other servant, to make the ordinary signal; for what I am anxious to see is not the removal of the present safeguard by means of human agency, and the substitution of machinery, but the application of both, so that if the one fail the other may succeed; and I think the public are entitled to the security that this, or similar simple inventions, for so important an object would afford.

I observed that at Esher, and at some other of the stations on the South Western railway, there is no standard signal lamp. Had there been one at Esher on the night of the collision, Fletcher would have exhibited the standard red signal, in addition to his hand lamp, and it is probable that the engineman, if not more of the servants with the mail train, would have seen one of the lights. For the driver and fireman acquire a sort of mechanical habit of looking out for the standard lamps and signals.

I question also the propriety of a practice which prevails on the South Western, in common with many other railways, of having no person up at night at some of those stations at which

the night mail trains do not stop, which was the case at Esher. This is, however, a subject which would lead me into great length, and may be better treated of in a separate report.

I have, &c.,
FREDERIC SMITH, Lt.-Col. R. E.,
Inspector-General of Railways.

The Earl of Ripon,
&c. &c.

Appendix.
II.
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Accidents.
—
No. 12.
South Western.

LETTER sent to the London and South Western Railway Company, with Copy of Sir F. Smith's Report on the Collision.

SIR, Board of Trade, 3rd November, 1841.

I AM directed by the Lords, &c., to enclose a copy of Sir F. Smith's report on the late collision on the London and South Western Railway for the information of the directors, and to call their especial attention to the observations and recommendations therein contained.

To the Secretary of the London and South Western
Railway Company.

I am &c.,
S. LAING.

IN Reply to Letter from this Office of the 3rd instant, with Copy of Sir F. Smith's Report on the Collision of the 16th October.

SIR, Nine Elms Station, 6th November, 1841.

I AM instructed to acknowledge the receipt of your communication, containing the copy of Sir F. Smith's report on the collision of the 16th ultimo, which was laid before the directors at their meeting yesterday, and with reference to the recommendations contained therein they have entered into the following resolutions:—

- “That the guards of the mail train be reprimanded.
- That the engineman and fireman of the mail train be prosecuted.
- That Mr. Martin (the resident engineer and superintendent of the line) be instructed to consult with Mr. Locke (the engineer-in-chief) as to the best description of standard signal, or to propose some other plan equally effective.
- That in addition to the usual tail lamp, a red lamp be placed on each side of the last carriage of every train.”

The question of an alteration to the guards' boxes as present in use on this line of railway is under the consideration of the directors.

S. Laing, Esq.
&c. &c.

I have, &c.,
ALFRED MORGAN, Secretary.

No. 13.

GREAT WESTERN RAILWAY.

No. 13.
Great Western.

REPORT of Lieutenant-Colonel Sir Frederic Smith on the Accident which occurred on the morning of the 24th instant.

Board of Trade, Whitehall, 25th December, 1841.

MY LORD,

I HAVE the honour to submit the following report, relative to the fatal accident which occurred yesterday on the Great Western Railway.

At half-past 4 o'clock A.M. a goods-train was despatched from the Paddington terminus, drawn by the Hecla engine, and this train consisted of 17 waggons, two carriages for third-class passengers, and a station truck.

There were two guards with the train, and it appears from their statements that the carriages were placed in the under-mentioned order:—

The Hecla, six-wheeled coupled engine.

The tender on six wheels.

A third-class carriage on six wheels.

A third-class carriage on four wheels.

A station truck on four wheels.

And 17 goods-waggons chiefly on four wheels.

Thomas Reynolds, who is represented to me by Mr. Seymour Clarke, the assistant-superintendent, to be a steady man, was the driver of the Hecla, and he had a fireman with him.

George Hassam, the first guard, was in the leading third-class carriage, and George Ayres, the second guard, was in one of the hinder goods-waggons.

I have not learnt that anything particular happened between London and Twyford, but I find that the train was 10 minutes behind time in leaving that station, as it did not start till 40 minutes, instead of 30 minutes after 6, which might lead to the conclusion that an undue velocity was used.

The distance from the Twyford to the Reading station is about five miles, and about midway between them there is a cutting through a clay and gravelly formation of $1\frac{1}{2}$ of a mile in length and of the extreme depth of 60 feet.

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 II.
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 No. 13.
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This is called the Sunning-hill Cutting. The gradients rise in both directions towards the centre of the cutting at the rate of about 4 feet a mile.

When the train reached this point the engine came in contact with an obstruction which threw it off the rails, and its velocity being in consequence suddenly checked while the waggons retained their impetus, they ran forward on the passenger-carriages, smashing one and considerably injuring the other, and, I lament to say, killing 8 and wounding 17 passengers.

At the time this dreadful accident occurred it was quite dark.

The guards jumped from their seats, and taking their lights they found that the cause of the accident was a heavy slip from the slope of the cutting adjoining their line, which had covered the rails to the depth of nearly four feet.

It was found that the concussion had thrown the whole of the passengers out of the carriages, and the train was discovered to be in the following condition:—

The engine, which had dashed through the slip, had left the rails and was found with its near side wheels buried in the slope of the cutting, but it was perfectly level and standing parallel to the rails.

The tender had not broken the couplings which connected it with the engine, but it was twisted across the "down" line, so that the fore and middle wheels were off the rails, and the hind wheels were over the rail nearest to the slope.

The leading third-class carriage on six wheels had broken from its couplings, but remained nearly over the rails, the head being a little turned towards the "up" line. I am informed that this carriage was very much damaged.

The second third-class carriage, on four wheels, was also found to have broken its couplings. It had run off the rails, and its head, which was rather beyond that of the six-wheeled carriage, stood over and obstructed the "up" line of rails.

The station truck, which was the next in the train, broke its fore couplings, and rushed on the top of the hinder part of the four-wheeled truck. It remained coupled to the leading goods-waggon, and this goods-waggon had its hinder end lifted off the rails by the next following waggon.

I was also desirous of seeing the third-class carriages, but when at Twyford I was informed that they had been sent back to Paddington, whereas, on returning there, it appeared that they had been forwarded to Reading. I did not think it of sufficient consequence to make a second journey to inspect them, as all the witnesses agreed as to their state, and I was enabled to judge of their construction by a carriage which was shown to me by Mr. Seymour Clarke, at Paddington.

On examining the ground where this unfortunate accident occurred, I found that the permanent way on both sides of the slip was in excellent order, and the slopes of the cutting in as good a condition as could be expected after the late continued unfavourable weather. The vertical height of the cutting at the slip is 58 feet, and the slope two to one, the base being 116 feet.

The length of the slip is about 30 yards.

I do not imagine that any engineer would have thought it necessary to give the sides of this cutting a greater slope than two to one, and therefore there has been, in my opinion, no error in the construction; but it is a question whether the large mass of "spoil" resting on the natural ground adjoining the edge of the cutting did not mainly cause, or at least greatly contributed to increase the extent of this extensive slip.

The height of this spoil bank varies from 10 to 16 feet, and is from 50 to 80 yards in width.

It seemed saturated with wet, and although the general drainage is to the south of the cutting, still the superincumbent weight of a portion of the mass was in part sustained by the soil that has given way. However I am told that it has remained in the state in which it was just before the accident for nearly two years, and it may therefore be presumed, that but for such excessive rain as we have had during this autumn, the slope would not have given way.

I understand that workmen have been occasionally employed in the Sunning-hill Cutting, in repairing slight slips of that description, to which all railways have of late been subject, but that owing to the ample width that the engineer had allowed between the slope and the rails, the latter have never before been covered, and there does not seem to have been any greater reason for watching this cutting at night than other parts of the line.

The slip must have happened between the passing of the preceding goods-train at 1 o'clock A.M., and the arrival of that to which the accident happened at about a quarter before 7 A.M.

This accident could only have been prevented by the line having been more closely watched, for which, as I have already said, there did not seem to have been any urgent necessity; but it might have been rendered less dreadful in its consequences if the passenger-carriages and the waggons of this train had, in conformity with the recommendation in my report of the 13th October, 1840 (in reference to the Hull and Selby accident), been properly provided with buffers. In that and in subsequent reports, and in my evidence before the Select Committee of the House of Commons on railways, of the closing session of the last Parliament, I recommended that every carriage running with a passenger-train should be provided with spring buffers. There can be no question that the intensity of the blow on the two passenger-carriages of yesterday's train would have been much diminished if even those carriages alone had been so provided, and it would have been still more reduced if the station-truck and a proportion of the waggons had been also fitted with spring buffers.

These spring buffers, I am aware, are expensive, but I still think that it should be pressed

upon every Company to use them with all the carriages that are to form a part of a passenger train.

I have stated that the whole of the passengers in the two-third class carriages were thrown out, and that the foremost carriage was very much broken, while the second was less injured.

Now I think it is reasonable to conclude that if the intensity of the blow had been so reduced by spring buffers, as to have materially diminished the damage done to the carriages, and that if also from that cause, and from the construction of the carriages, the passengers had not been thrown out, the loss of life would in all probability have been much less.

But whether this conclusion be arrived at or not, I am bound to state that the third-class carriages used on the occasion of this accident were not of such a construction as the public have a right to expect.

The third-class carriages have seats 18 inches high, but the sides and ends are only two feet above the floor, so that a person standing up, either when the train is unexpectedly put in motion or stopped, is, if near the side or end, in great danger of being thrown out of the carriage, and those sitting near the sides are also in danger of falling; besides which, the exposure to the cutting winds of the winter must be very injurious to the traveller, who, if proceeding from London to Bristol, often remains exposed for ten or twelve hours, a great part of which is in the night-time.

The Great Western Company should in my opinion be immediately recommended to alter the construction of their third-class carriage, and to give the sides and ends a height of 4 feet 6 inches above the floor. This recommendation should be extended to all companies whose carriages have a less internal height.

I beg also to repeat the suggestion contained in my report of the 23rd February, wherein I recommended that all engines should carry a reflector white lamp on the buffer beam. I am aware that these lamps do not throw their rays sufficiently far to admit of the drivers of trains, which are moving at very high velocities, seeing an obstruction early enough to be enabled to stop their trains before coming in contact with the obstruction, but it would give such warning of danger to the drivers of trains moving at a moderate speed, as to enable them to apply their breaks and sound the steam-whistle, as a signal to the guards to apply their breaks also, by which the rate of speed would be so diminished as considerably to lessen the force of any collision.

In conclusion, I beg to observe that in my opinion passengers should not be carried with heavy luggage trains, for, independent of other objections to this system, the danger is increased by the means of arresting the progress of the train, not being in due proportion to its weight.

I have, &c.

FREDERIC SMITH, Lt.-Col. R.E.,
Inspector-General of Railways.

The Earl of Ripon,
&c. &c. &c.

LETTER sent to the Great Western Railway Company, relative to Sir Frederic Smith's Report on the Accident of the 24th December.

SIR,

Board of Trade, December 28, 1841.

WITH reference to the late fatal accident on the Great Western Railway, I am directed, &c. to inform you that Sir F. Smith has reported to their Lordships, among other points arising out of the investigation with which he was charged, that in all probability the result of the accident would have been much less disastrous if the passenger-carriages and waggons forming the train had been provided with spring buffers. He has further reported, "that the third-class carriages used on the occasion of the accident were not of such a construction as the public had a right to expect, having sides and ends only two feet above the floor, so that a person standing up either when the train is unexpectedly put in motion or stopped, is, if near the side or end, in great danger of being thrown out of the carriage, and those sitting near the sides are also in danger of falling; besides which, the exposure to the cutting winds of the winter must be very injurious to the traveller, who, if proceeding from London to Bristol, often remains exposed for 10 or 12 hours, and great part of which is in the night-time." And he states "that the Great Western Railway Company should be immediately recommended to alter the construction of their third-class carriages, and to give the sides and ends a height of at least four feet six inches above the floor."

These recommendations, viz. that the height of the sides and ends of the third-class passenger carriages should be raised, and that all such carriages should be fitted with spring buffers, appear to their Lordships so important that they think it their duty to urge them at once upon the attention of the Directors, leaving to a future period such further observations as a full consideration of the circumstances connected with the accident may suggest.

To the Secretary of the Great Western
Railway Company.

I am, &c.,
S. LAING.

IN reply to Letter from this Office of the 28th December, relative to Sir F. Smith's Report on the Accident of the 24th.

SIR,

Prince's Street, Bank, December 29, 1841.

YOUR letter of yesterday's date, referring to a report made by Sir Frederic Smith on the recent melancholy accident to a goods-train in Sunning Cutting, was submitted to the Board of Directors immediately upon the receipt of it this day.

Appendix.

II.
Reports on
Accidents.

No. 13.
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Appendix.
II.
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It is a satisfaction to the Board to know that the very recommendations now made by Sir Frederic Smith had been already adopted some weeks ago, the directors having ordered the construction of several third-class trucks, with sides and ends of the height described, and with spring buffers, for the greater comfort and protection of the passengers.

I am desired to add that the Directors will press forward the completion of those conveyances with the utmost expedition, consistent with good workmanship. They will be extremely solid, and upon six wheels. The Directors are also engaged in considering, most maturely, whether they can in any other manner contribute to the greater security of third-class passengers.

S. Laing, Esq.,
&c. &c.

I have, &c.,
CHARLES A. SAUNDERS, Secretary.

LETTER to the Great Western Railway Company, in reply to their Letter of the 29th, relative to Third-class Carriages, &c.

SIR,

Board of Trade, December 30, 1841.

IN reply to your letter of the 29th December, I am directed, &c., to express their satisfaction at finding that the Directors of the Great Western Railway Company intend to afford to third-class passengers the protection of spring buffers, and an increased height of framing, and that they are anxiously engaged in considering what other measures can be adopted to contribute to the security of passengers of that class.

Referring to the late melancholy accident which occurred on the 24th instant, and to the other accident announced in your letter of the 22nd instant, by which a third-class passenger was thrown out of the carriage in which he was riding, it appears to their Lordships urgently demanded by a due regard for the public safety that the additional height to the framing of third-class carriages should be given without delay, and that if the new third-class carriages are not completed, some temporary protection should be fitted up in those which are despatched in the interim. Referring also to the accident of the 24th instant, and to the evidence of the Company's officers at the inquest, from which it appears unquestionable that the practice of sending third-class passengers by heavy luggage trains is attended with considerable additional risk, whether such passengers are placed next the engine or at the end of the train, their Lordships would suggest to the Directors the desirableness of making, if practicable, some arrangement by which third-class passengers may be conveyed in a manner which does not expose them to any additional danger.

To the Secretary of the Great Western
Railway Company.

I am, &c.,
S. LAING.

IN reply to Letter from this Office of the 30th December, relative to Third-class Carriages.

SIR,

Prince's Street, Bank, January 1, 1842.

YOUR letter of the 30th instant will receive the most careful consideration of the Board of Directors.

In the mean time I have the pleasure to inform you that the Directors had ordered luggage-trucks with higher sides and ends to be temporarily fitted up for the conveyance of passengers in the third class, and that such trucks have been in use ever since Tuesday the 28th ultimo.

S. Laing, Esq.,
&c. &c.

I have, &c.,
CHARLES A. SAUNDERS, Secretary.

III.—CORRESPONDENCE RELATING TO ACCIDENTS.

No. 1.

ARBROATH AND FORFAR.

Arbroath and Forfar Railway Office,
Arbroath, 25th February, 1841.

SIR,

I RECEIVED your communication of the 20th instant, requesting that a detailed report of the accident which occurred on this railway on the 5th instant might be transmitted without delay, accompanied by a copy of the regulations in force as to the running of ballast trains, and generally for the prevention of collisions.

I beg to enclose a detailed report of the accident which occurred on the 12th instant. There having been no accident on the 5th, I presume the last-mentioned date was given by mistake.

The report explains the cause of there being no regulations published as to the running of ballast trains. Excepting the bye-laws and regulations, a printed copy of which was formerly sent, there is only one other regulation of the kind to which you refer, a copy of which I beg to enclose.

S. Laing, Esq.
&c. &c.

I have, &c.

JOHN MACDONALD.

Appendix.

III.
Correspondence
relating to
Accidents.

No. 1.

Arbroath & Forfar.

DETAILED Report of the Accident which occurred on the Arbroath and Forfar Railway, on the 12th February, 1841.

Arbroath, 25th February, 1841.

THIS Railway is $15\frac{1}{2}$ miles in length, and is mostly a single line, but with frequent passing places. There are six intermediate stations between the terminal stations at Arbroath and Forfar, viz. Colliston, Leysmill, Friockheim, Guthrie, Auldbar Road, and Clocksbriggs. The trains always stop in passing the stations of Leysmill, Friockheim, and Auldbar Road; Colliston, Guthrie, and Clocksbriggs are considered minor stations, and the trains do not stop at them unless some business requires it, or a signal be made that there are passengers waiting.

The morning up-train, which always leaves Arbroath at half-past eight o'clock, started on Friday, the 12th instant, at the usual time. It was under the sole charge of William Crabb, as guard; and it was his duty to regulate the speed according to a time-table published by the Directors. The time at which he was to leave each station is noted on the margin. It has been ascertained that the train did not start from Friockheim before the proper time; and it rather appears it was two or three minutes later. But there was no stop made at Guthrie, and very little detention at Auldbar Road. It is proved that just after leaving the last-mentioned station, the guard went forward to the engine-driver, and told him that they were a minute or two minutes before time; and it appears that he immediately shut off part of the steam. There was no stop at Clocksbriggs, although it is proved the train was fast from five to six minutes, and within a minute after a ballast train was met coming down the line, and a violent collision took place within two miles of Forfar, and half a mile beyond Clocksbriggs. There was a very dense fog at the time, and the proximity of the two trains was not observed until they were within 200 or 300 yards of each other. The ballast train had gone to Forfar from Friockheim after the down train passed that place, about a quarter before eight o'clock; and the guard of the up-train knew of the ballast train being at Forfar, but there was no instance during the winter of the ballast train starting again until the up-train arrived; and it does not appear that he had any reason to think or suspect that such a thing would occur.

The ballast trains were rarely used upon the line, and formed no part of the regular traffic. The Directors had established an order that these trains should be committed to the charge of James Paterson, superintending wayman, who has held that appointment since the opening of the railway. His instructions were to be personally with every ballast train; to guard against any interference with, or obstruction of, the regular traffic; and to avoid every risk of accidents. The ballast trains being only occasional for the conveyance of materials, &c. and noways connected with the regular traffic, and neither carrying goods nor passengers, it was not judged practicable to establish special regulations applicable to them. The directors relied upon Paterson's steadiness and prudence, and believed that the strict injunctions which he received in presence of the Board, to avoid every risk of accident, would be more effectual for the public safety than any special regulations that could be devised. On the morning of the 12th, Paterson, it is ascertained, went to the Ticket-office at Forfar, and regulated his watch by the time-piece there; and he states that, finding he had abundance of time, he ordered the train to start downwards, intending to remain at Clocksbriggs station until the up-train passed. According to Paterson, he started at six or seven minutes past nine o'clock. It appears that he is incorrect in this, and that it could not then be less than 12 minutes past nine o'clock. The morning was obscured by a dense fog, and within five or six minutes after starting, the collision took place.

The tender of the ballast train was in front of the engine; both the trains were going at a speed of from 18 to 20 miles an hour; and the fog preventing either being seen until the distance between them did not exceed 200, or, at most, 300 yards, the collision was inevitable. Both engine drivers reversed their steam, but with scarcely any effect. The tender of the ballast engine was forced upwards, and the water-tank rested on the top of the engine. Neither train gave way, nor were the carriages or waggons driven off the rails, or seriously

M

	H.M.
Arbroath . .	8 30
Colliston . .	8 45
Leysmill . .	8 50
Friockheim .	9 0
Guthrie . . .	9 7
Auldbar Road	9 15
Clocksbriggs	9 23

Appendix.

III.

Correspondence
relating to
Accidents.

No. 1.

Arbroath & Forfar.

injured. The guard and trainman of the up-train leaped down before the collision, and escaped with little or no injury. The guard was not injured at all. A passenger, Mr. Campbell, governor of Dundee prison, had his knee-pan fractured, and received some slight hurt on the head. The engine driver of the up-train (William Barrie) sustained a severe blow on the lower part of the back. His fireman was thrown off, but escaped uninjured. On the ballast train, the engine driver (John Adamson), had his leg broken in two places, and he was severely burnt about the hands. A labourer (Robert M'Guire), who had been riding on one of the waggons, had his collar-bone broken. These were the personal injuries sustained. Paterson leaped off, or was thrown off, and suffered no material injury.

The engines and tenders of both trains were greatly damaged. The directors have made a strict investigation into all the circumstances, and they have come to the conclusion, that the blame of the accident mainly rests with Paterson. It required a combination of circumstances to have occasioned it. The up-train being before its time was most unfortunate, for a single minute would have been sufficient for the ballast train to have reached the offset at Clocksbriggs, and all would have been safe; and had it not been for the fog, which rendered the opposing trains invisible, there would have been no risk, as they would have seen each other long before there was danger. But the very circumstance of the fog increases Paterson's culpability; he knew that the up-train was within 20 minutes of her time, according to his own admission; and he was not justified, after the instructions he had received, to avoid every possibility of risk, in ordering the ballast train to start at such a time, and in such weather. The guard of the up-train also committed a breach of orders, but the circumstance of his having directed the engine driver to slow his speed, when leaving Auldbar Road, joined to the belief, which seems to have been honestly entertained, that the ballast train would not leave Forfar until the up-train arrived, greatly extenuates any blame attachable to him.

The Directors have thought it their duty to dismiss Paterson from their service, and to suspend Crabb, the guard, during pleasure.

The matter has been investigated by the judicial authorities, and the declarations and information collected by them have been transmitted to the Lord Advocate of Scotland, in order that the Crown counsel may determine whether any of the parties ought to be proceeded against criminally.

It may be mentioned, in conclusion, that all the parties who received personal injury, have continued to do well, and those who suffered most are in a fair way of recovery.

JOHN MACDONALD, Secretary,
Arbroath and Forfar Railway.

GENERAL ORDER for Prevention of Accidents.

GENERAL Order, directed to be promulgated by Directors at their meeting,
23d October, 1840.

"THAT it shall be the special duty of the guard and trainman to report to the superintendents every accident or remarkable occurrence on the line; and every breach of the bye-laws, having a tendency to occasion accidents; and such reports shall be forthwith entered in a book by the superintendents for the information of the directors and clerk; and all the servants of the company are enjoined to assist the guard and trainman in the performance of this duty."

JOHN MACDONALD, Clerk.

[A true copy.

JOHN MACDONALD.]

LETTER sent to the Arbroath and Forfar Railway Company, with observations by Sir F. Smith on the Report of the Accident on the 12th February, enclosed in their letter of the 25th.

SIR,

Board of Trade, 3d March, 1841.

I AM directed by the Lords, &c., to call your attention to the accompanying remarks by Sir F. Smith, on the detailed report of the accident which happened on the 12th February on the Arbroath and Forfar Railway, enclosed in your letter of the 25th February.

I am, &c.

To the Secretary of the Arbroath and
Forfar Railway Company.

S. LAING.

OBSERVATIONS on the Detailed Report of the Accident which occurred on the Arbroath and Forfar Railway on the 12th February, 1841.

Board of Trade, Whitehall, 2d March, 1841.

It does not appear by this report that the station clerks keep an account of the time at which the trains pass, and it is also doubtful whether the guards in charge keep any record on this subject,—both are essential to the public safety, as they tend to ensure that degree of punctuality which is of first-rate importance in railway travelling.

It seems highly probable that the passenger-train left the Auldbar Road station before the proper time. If this were the case, and if a regulation exists prohibiting the starting of a train before the appointed time, not only was the guard, William Crabb, much to blame on the occasion in question, but the station clerk at Auldbar Road was reprehensible.

If no such regulation exists, the Directors would do well to establish it without loss of time; and they should also adopt measures that shall prevent the possibility of any ballast or goods-train being on the line within half an hour of the time when any passenger train is due.

The misconduct on the part of Paterson in starting from Forfar with the ballast-train

before the arrival of the passenger-train, which was contrary to orders, was of so glaring a nature that it seems proper that he should be the subject of a prosecution under Lord Seymour's Act.

FREDERIC SMITH,
Lieut.-Col. R. Engineers.

Appendix.
III.
Correspondence
relating to
Accidents.

No. 2.

GARNKIRK AND GLASGOW RAILWAY.

LETTER sent to the Secretary of the Garnkirk and Glasgow Railway Company, with reference to the Accident to John Kelly on the 10th instant.

Railway Department, Board of Trade,
Whitehall, 19th July, 1841.

SIR,

WITH reference to your letter to Mr. Porter, dated the 12th instant, giving some particulars of the accident by which John Kelly was killed, and William Haggerty injured on the Garnkirk and Glasgow Railway, I have to observe that it is a general practice on the best regulated lines for the engine-drivers to blow the steam-whistle whenever they perceive workmen on the line a short distance a-head of them; and it is also a rule when this warning is given for such persons to step clear of *both* lines of rails till the train has passed. The Lords of the Committee of Privy Council for Trade suggest that similar regulations should be established on the Garnkirk and Glasgow Railway; for had they existed, the fatal accident under consideration would not, in all probability, have occurred.

I have, &c.,

The Secretary of the
Garnkirk and Glasgow Railway.

FREDERIC SMITH,
Lieut.-Col. Royal Engineers,
Inspector-General of Railways.

RELATIVE to Accident detailed in Report of the 12th July.

SIR,

Glasgow, 16th August, 1841.

I HAVE the honour to inform you that, in compliance with the suggestion in your letter to me of the 12th current, received on Saturday the 14th, I on that day caused the notice, of which I beg to subjoin a copy, to be issued to the oversmen and police on the Garnkirk and Glasgow Railway. I fear, however, that the rule will not be regularly attended to, except when the workmen are under the immediate observation of their superiors or the police.

I have, &c.,

Lieut.-Col. Sir Frederic Smith, Esq.
&c. &c. &c.

CHARLES ALEX. KING,
Sec. and Manager, G. and G. R. Co.

Copy.

SIR,

Garnkirk and Glasgow Railway Office,
Glasgow, 14th August, 1841.

INTIMATE the following regulation to the workmen under your charge:—

All workmen on the railway shall, on the approach of a train, move to the side of the road, *clear of both lines*, to prevent risk of accident to the men, by trains or waggons running in opposite directions, or passing along both lines at same time and place.

C. K.

No. 3.

MONKLAND AND KIRKINTILLOCH.

LETTER sent to the Monkland and Kirkintilloch Railway relative to the Accident on the 10th instant, causing the death of Robert Bruce, a labourer.

SIR,

Board of Trade, Whitehall, July 21, 1841.

I HAVE to acknowledge the receipt of the return containing an account of the accident which occurred on the Monkland and Kirkintilloch Railway on the 10th instant, causing the death of Robert Bruce, a labourer, at an adjoining lime-kiln.

It appears from this return that a locomotive engine, with a train of limestone waggons, had nearly arrived opposite to the lime-kiln by the north line of rails, and that the attention of the deceased having been directed to this train, he did not notice the approach of a locomotive engine on the south line, and having attempted to cross that line, he was struck by the engine, and killed on the spot.

The circumstance contained in *your return* having been duly considered, I am instructed by the Lords of the Committee to state that no engine should approach a train without the driver giving warning of its course by sounding the steam-whistle two or three times, in order that all persons engaged about the tram may have time to place themselves in security. Had this been attended to by the driver of the engine on the south line, Robert Bruce's life would not have been sacrificed.

If an order to the above effect exists in the regulations of the Monkland and Kirkintilloch Railway, the driver of the locomotive engine which occasioned the death of Robert Bruce should, it is conceived, be prosecuted under Lord Seymour's Act; and if not, their Lordships would suggest that such a salutary order should forthwith be inserted in the code of the Company for the guidance of the engine drivers.

I have, &c.

To the Secretary of the Monkland and
Kirkintilloch Railway Company.

F. SMITH, Lieut.-Col. R. E.
M 2

No. 3.
Monkland and
Kirkintilloch.

Appendix.

III.
Correspondence
relating to
Accidents.No. 4.
London and
Greenwich.

No. 4.

LONDON AND GREENWICH RAILWAY.

LETTER sent to the Secretary of the London and Greenwich Railway relative to working
the trains with the Tender foremost.

SIR,

Board of Trade, Whitehall, July 20th, 1841.

THE Lords of the Committee of Privy Council for Trade having had under their consideration the circumstances connected with the fatal accident which occurred on the Sheffield and Rotherham Railway on the 3d of June last, and which, it appears, was caused by working a train tender foremost, a practice that is generally, if not universally, admitted to be attended with greater danger to the passengers than when the trains run with the engine a-head, their Lordships have directed me to express their concern at learning that it is the practice of the London and Greenwich Railway Company to run their trains in one direction with the tender foremost; and their Lordships hope that steps will be taken for discontinuing an arrangement which they consider unsafe, notwithstanding it may have prevailed on the Greenwich line without having hitherto produced serious mischief.

I have, &c.,

J. Y. Ackerman, Esq.

FREDERIC SMITH, Lieut.-Col. R. Engineers,
Inspector-General of Railways.

IN reply to Letter from Sir Frederic Smith of the 20th July.

SIR,

London Terminus, July 22, 1841.

I BEG to acknowledge the receipt of your communication of the 20th instant, and to inform you that the same shall be laid before the Board of Directors at their next meeting.

I have, &c.,

Sir Frederick Smith,
&c. &c. &c.H. ADRON, Sec. *pro. tem.*No. 5.
London and
Brighton.

No. 5.

LONDON AND BRIGHTON RAILWAY.

LETTER sent to the London and Brighton Railway Company, with Copy of a Memorandum
from Sir F. Smith relative to the working of the Shoreham branch.

SIR,

Board of Trade, 21st August, 1841.

I AM directed, &c. to subjoin a copy of a memorandum which has been addressed to their Lordships by Lieut.-Col. Sir F. Smith relative to the working of the Shoreham branch of the London and Brighton Railway, and to request that you will call the attention of the Directors to the propriety of adopting the recommendation therein contained which appears to their Lordships very important for the public safety:—

"It appears that, in consequence of their being no turn-table for the engine at the Shoreham terminus, it is the practice to run the trains from Shoreham to Brighton with the tender foremost.

"The accident which occurred from this cause on the 3d June last on the Sheffield and Rotherham Railway, and which was attended with such fatal consequences, has sufficiently proved, if any proof were necessary, the danger of this practice. It therefore seems expedient that the Lords of the Council should recommend to the Directors of the Brighton Railway to discontinue it."

I am, &c.

The Secretary of the London and Brighton
Railway Company.

S. LAING.

IN reply to Letter from this Office of the 21st instant.

SIR,

Angel Court, 25th August, 1841.

YOUR communication of 21st instant has been laid before the Directors of this Company, and I am instructed to inform you that the memorandum of Sir Frederic Smith, transmitted therein, recommending the discontinuance of the practice of running the tender foremost on the Shoreham branch, will meet with immediate attention.

I have, &c.,

G. R. Porter, Esq.
&c. &c. &c.

THOMAS WOOD, Sec.

No. 6.
Lancaster and
Preston.

No. 6.

LANCASTER AND PRESTON RAILWAY.

LETTER sent to the Lancaster and Preston Railway Company, with Copy of Sir Frederic
Smith's Report on the imperfect state of the Fencing, &c.

SIR,

Board of Trade, 28th September, 1841.

I AM directed, &c., to enclose a copy of a report from Lieut.-Col. Sir F. Smith to the Earl of Ripon on the imperfect state of the fencing on the Lancaster and Preston Railway at Dock Street in Preston, and to refer to Sir F. Smith's previous report, and to the letter of the 22d January from the secretary of the Lancaster and Preston Railway Company, in which it is stated that, "with respect to the fencing of this line at the point where it joins the North Union Railway, I have to inform you that a fencing has been erected in accordance with Sir F. Smith's

recommendation." Their Lordships direct me to state that, unless a certificate from the Directors of the Company is transmitted to this office within fourteen days from this date, certifying that the deficiencies in the fencing of the Lancaster and Preston Railway, pointed out in the report, have been made good, their Lordships will be under the necessity of resorting to such further measures as may enforce a compliance with the provisions of the Company's Act of incorporation.

The Secretary of the Lancaster and
Preston Railway Company.

I am, &c.

S. LAING.

Appendix.
III.
Correspondence
relating to
Accidents.
No. 6.
Lancaster and
Preston.

REPORT of Lieut.-Col. Sir Frederic Smith, relative to the incomplete state of the Fencing
of the Lancaster and Preston Railway at Preston.

MY LORD,

Carlisle, September 21, 1841.

IN a report which I made in the course of last year to the Lords of the Committee of Privy Council for Trade, on an accident attended with fatal consequences which occurred on the Lancaster and Preston Railway, from a collision between a ballast-train and a passenger-train from Fleetwood, I had occasion to remark on that part of the Lancaster Railway which joins the North Union.

By reference to my report, and the correspondence which passed between the railway department and the secretary of the company, your Lordship will perceive that I complained of the imperfect manner in which the railway was fenced at Dock Street in Preston.

I availed myself of being at the last-named place for the purpose of inquiring into the recent accidents of the North Union, to inspect its point of junction with the Lancaster line, and I regret to have to report that the fencing alluded to is still in a most imperfect state, exposing three lines of railway,—viz., the North Union, the Lancaster and Preston, and the Fleetwood to the danger which would result to the trains from cattle straying upon the line.

I therefore think it would be proper that the immediate attention of the Lancaster and Preston Company should be called to this subject.

I have, &c.,

FREDERIC SMITH,
Lieut.-Col. R. Engineers.
Inspector-General of Railways.

The Earl of Ripon,
&c. &c. &c.

IN reply to Letter from this Office of the 28th September relative to the Fences on the Line.

SIR,

Lancaster, 11th October, 1841.

IN reply to your letter of the 28th ultimo, covering a report of Sir F. Smith's, I beg to inform you that a good and efficient fence has been erected at the place in question, and that a certificate from the Directors shall be sent in the course of two or three days, as requested by your letter.

A fence was erected there last winter, but it was stolen for firewood from time to time.

I have, &c.,

S. Laing, Esq.,
&c. &c.

S. EDWARD BOLDEN, Sec.

No. 7.

YORK AND NORTH MIDLAND RAILWAY.

No. 7.
York and North
Midland.

IN Sir F. Smith's Report to the Lords, &c. of the 2nd September, 1841.

SIR,

Railway Department, Board of Trade,
Whitehall, 2nd September, 1841.

IN returning from a tour of inspection of some of the Northern Railways, I passed along the York and North Midland Railway, on the 30th ultimo, by the train that left York at 12 hours 15 minutes, and I feel it to be my duty to request you will bring to the notice of your Directors an irregularity which came under my observation on that occasion, and which, I doubt not, will be marked by their strong disapprobation.

The train consisted of first and second-class passengers, and carriage-trucks.

At Castleford, two or three third-class passengers were desirous of being conveyed to the south, and as there were no third-class carriages attached to the train, and probably none at the station, these persons were desired to get on one of the carriage-trucks, in which they were conveyed, I believe, to Normanton.

I cannot help considering this to have been a very dangerous and improper proceeding; for, as the truck was not enclosed, like those of the London and Birmingham, and of some other companies, not only were the passengers exposed to the weather, and to the risk of falling off, in the event of any sudden irregularity of the train, but had one of the axles of the truck broken, or the carriage got off the line from any other cause, the most fatal consequences might have ensued.

I have, &c.

FREDERIC SMITH,
Lieut.-Col. Royal Engineers,
Inspector-General of Railways.

The Secretary of the York and
and North Midland Railway Company.

Appendix.
 III.
 Correspondence
 relating to
 Accidents.
 No. 7.
 York and North
 Midland.

SIR,

York, 4th September, 1841.

I HAVE the honour to acknowledge the receipt of your favour of the 2nd inst., complaining of an irregularity in placing some third-class passengers on a truck, at Castleford, and pointing out the danger in so doing.

I beg to assure you, it is strictly against our orders for any person in the employment of this company to allow passengers to ride upon any carriage-truck, and the circumstance you name will be particularly inquired into, and prevented in future.

The clerk at Castleford station has orders not to book third-class passengers at all, going south, or to Manchester, as we do not make use of third-class carriages for those trains, and consequently, I am almost led to suppose those you saw, and understood were passengers, were workmen on the line, who had occasion to go further south, and committed the irregularity in question.

I have, &c.

Lieut.-Colonel Sir F. Smith,
 &c. &c. &c.

G. BAKER, Sec.

SIR,

York, 6th September, 1841.

I BEG most respectfully to enclose to you a letter I have received from our clerk who has the management of our station at Castleford, in explanation of the circumstance you complain of having occurred at that station, when travelling upon our line. I cannot account for the circumstance, unless you have been mistaken in naming this particular station for some other.

I have, &c.

Lieut.-Col. Sir F. Smith,
 &c. &c. &c.

G. BAKER, Sec.

SIR,

Castleford, 4th September, 1841.

I AM in the receipt of your note, and in reply, beg respectfully to state that I am entirely ignorant of the circumstance complained of in Sir F. Smith's letter; no passengers, by my sanction or knowledge, are allowed to ride on carriage-trucks; my attention must have been directed to some other part of my business, so as to overlook it.

Although third-class carriages are not attached to any of the Derby trains, third-class passengers are invariably treated with the same respect as others of a superior class. And to avoid the possibility of the want of accommodation, I am provided with *two* extra carriages, which always stand here to meet contingencies, and which are not unfrequently used, as circumstances may require.

I have no further explanation to offer; for the future I shall be careful to have the trains examined previously to their starting, to avoid a recurrence of complaint.

I am most anxious to exert my utmost energies for the proper direction of passengers, so as to secure the satisfaction of the gentlemen I have the honour to serve.

I have, &c.

G. Baker, Esq.
 &c. &c.

FRANCIS CLARK.

SIR,

Railway Department, Board of Trade,
 Whitehall, 7th September, 1841.

I HAVE the honour to acknowledge the receipt of your letters of the 4th instant, and of yesterday's date, the latter enclosing one from Mr. Clark. In reply, I beg to state that the station referred to in my letter of the 2nd instant, was Castleford, as I therein mentioned, and that I conceive the persons taken up and placed on a carriage-truck were not workmen of the Company, as the officer of the Company whom I saw arranging the position of the passengers distinctly told the persons to whom I allude that they were "third-class passengers," and that there was no other means of conveyance for them than the carriage-truck, on which I saw them placed.

I observe that Mr. Clark says, that "although third-class carriages are not attached to the Derby trains, third-class passengers are invariably treated with the same respect as others of a superior class; and that, to avoid the possibility of a want of accommodation, he is provided with two extra carriages, which always stand at Castleford to meet contingencies, and which are not unfrequently used as circumstances may require."

I beg to be informed of what class these extra carriages are, and if they should be of the first or second class, whether it is meant that third-class passengers are usually placed in them.

From Mr. Clark's observation as to the respect shown to third-class passengers, and from other parts of his letter, I should have imagined that third-class passengers are booked at Castleford; but by your letter of the 4th, this would appear not to be the case.

However, by an inquiry at your audit-office, it could be ascertained whether in the day in question any third-class passengers were conveyed from Castleford to the south.

I cannot conclude this without observing, that it is very desirable not only that no passengers should be conveyed in carriage-trucks in the manner I have pointed out, but also that the workmen of the Company should not be subjected to the risk to which such a mode of conveyance would expose them in trains moving at high velocities.

I have, &c.

The Secretary of the York and North
 Midland Railway Company.

FREDERIC SMITH,
 Lieut.-Col. Royal Engineers,
 Inspector-General of Railways.

No. 8.

LONDON AND CROYDON RAILWAY.

LETTER sent to the London and Croydon Railway Company, with Copy of Sir F. Smith's Observations on the Regulations for working the Croydon and Brighton Junction.

SIR,

Board of Trade, 3rd November, 1841.

I AM directed, &c. to enclose, for the consideration of the Directors of the London and Croydon Railway Company, the observations which have been made by Sir F. Smith, on the Regulations for working the Croydon and Brighton Junction :—

I am, &c.

S. LAING.

The Secretary of the London and Croydon Railway Company.

REGULATIONS in use for working the Croydon and Brighton Junction, with Sir Frederic Smith's Observations on the same.

Appendix.

III.

Correspondence relating to Accidents.

No. 8.

London & Croydon.

1. *No signal* being given at the points, shows that they are right for Croydon trains.

2. *The white signal* shows that all is right for Brighton trains.

The red signal is to stop both.

3. The switchman is to be constantly at his post, and he is held responsible for the efficient state and working of the switches and signals, and for the proper signals being given to each train.

4. When the switchman sees two trains approaching the switches in a contrary direction, he is to allow the nearest to pass the switches first, the preference being given to passenger-trains before goods-trains.

5. When he sees any danger of collision or accident, he is to stop both, and he is not to allow a train to pass the junction unless the line is clear from obstruction as far as he can see.

6. When a Brighton passenger-train and a Croydon train are approaching the switches together, both going in a direction towards London, the preference is to be given to the Brighton quick-train, which shall be allowed to pass before the Croydon train.

7. If no *up-train* from the Brighton railway shall be within sight or hearing, Croydon *up-trains* shall be allowed to pass the junction; but the switchman shall not allow any passenger or goods train *up* from the Brighton railway to follow a Croydon *up-train* at a less interval than 10 minutes, nor shall any engine coming up from the Brighton railway with *waggons* be allowed to run up on the Croydon railway unless there shall be an interval of 10 minutes before the fixed time for the arrival of the next Croydon *up-train*.

8. In regard to the regulations respecting the Croydon and Greenwich junction, the preference is given to the train which first passes a post fixed at half a mile distance from the switches in each direction, the signal being given to any other train to stop. In case of two trains being at an equal distance, the switchman is to use his discretion, which he allows to pass.

Some of the Brighton trains now stop at the New Cross station of the Croydon railway, and after Monday next they will all stop there, but they do not stop at any other station on the Croydon railway.

9. When trains are stopping at the stations, policemen have orders to keep a good look out to stop any train which may follow.

OBSERVATIONS BY SIR F. SMITH.

1, 2, and 3. It is presumed that these three rules are intended to apply to journeys in both directions, but it should be specified at what distance from the junction either train should stop in the event of the signal, or the absence of the signal, indicating that the points are not right for such trains. These arrangements may answer very well in clear weather, but I doubt their affording security in fogs.

4. A Pole should be set up by agreement between the companies, on each line, on both sides of the junction, as a guide to the switchman, by which he is to regulate the permission to advance; and at those poles the engine-man of the train that is *not* to proceed should shut off the steam, apply the break, and reverse the engine, if necessary, in order to make certain of stopping the train, at least 50 yards short of the points.

5. There can be no danger of collision, if the arrangement contemplated above be carried into effect.

6. This is a very proper rule, because the Brighton trains only stop at the New Cross station, whereas the Croydon trains stop at several stations between the junction and London Bridge.

7. This is a good arrangement, but it is a question whether the interval of 10 minutes is sufficient between the Croydon trains, which have to stop several times between the junction and New Cross, and the Brighton trains which follow them and make no stoppage between those two places. The regulation should go on to state that at the intermediate stations the Brighton trains should be detained until the Croydon trains shall have departed some definite period, the length of which should bear some proportion to the distance to the first following station. It is presumed that the switchman has a watch, and notes the time that each train passes.

8. This should not be left to the discretion of the switchman. The preference should be fixed by the Directors of the joint station.

9. Whenever a train is stopping at a station, a signal should be displayed from some standard-post, prohibiting any other train from coming in; and the Brighton trains should not be allowed to run past any station while the trains of the Croydon company are stopping to take up or set down passengers.

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London & Croydon.

A copy of the following order is in the hands of every policeman and signalman:—

10. "The signal to *stop*, is always to be given to an engine or train following another at a less interval than *three minutes*, and the signal of *caution* is always to be given to an engine or train following another at a less interval than *seven minutes* to trains on the up-line at the Dartmouth Arms station."

It will be seen that the operation of this order, in a line where the stations are so close, and the road watched by a perambulating police, is to render it almost impossible that a train should run into another standing at a station.

10. These intervals of *three* and *seven* minutes may answer very well when a Croydon train is following a Brighton train, but not when the reverse is the case.

The persons who are to exhibit these signals should have watches, and note the time at which each train passes. I do not perceive in this code of regulations any rule laid down for the conduct of the switchmen and others employed at the junctions and other parts of the lines common to the companies concerned during the time of fog. This is of pressing importance, and I would recommend that it should be taken into the immediate consideration of the Directors.

We will suppose, for instance, a fog at the Greenwich junction, so dense that the switchman cannot see the trains at the half-mile posts, nor even a hundred yards from him: unless, under such circumstances, a peremptory order is given for stopping all trains at the junction, it is difficult to conceive how collisions are to be prevented. Again, it is well known that a place or object is sometimes distinctly seen from a certain distance on one side, when on the opposite side it is wholly invisible in a fog. Supposing then, in a fog, that the atmosphere is so dense on the London side of the Croydon junction, that the white flag set up to show that the line is clear for the Brighton trains is not discernible at 100 or 50 yards distance from the switches, while it is discernible at the same distance on the Brighton side, then one train (that from Brighton) seeing the White signal, and the other (from London for Croydon) no signal: both would run to the points at the same moment, and a collision would ensue.

Under every view of the case, I am disposed to think all trains should stop before they come up to the junction, and that in clear weather the switchman should make a signal to the train that is to advance; and in foggy weather he should communicate personally with the engine-man.

2nd Nov. 1841.

FREDERIC SMITH.

No. 9.
Liverpool and
Manchester.

No. 9.

LIVERPOOL AND MANCHESTER RAILWAY.

LETTER sent to the Liverpool and Manchester Railway Company relative to the Accident of the 4th December.

SIR,

Board of Trade, 7th Dec., 1841.

WITH reference to the return of an accident on the Liverpool and Manchester Railway on the 4th December, I am directed, &c., to suggest for the consideration of the Directors the propriety of establishing a regulation, such as exists on many other railways, that no train shall pass a station except at a very moderate rate of speed if any other train is discharging or taking in passengers at such station.

The Secretary of the Liverpool and Manchester
Railway Company.

I am, &c.

S. LAING.

No. 10.
Great Western.

No. 10.

GREAT WESTERN RAILWAY.

LETTER sent to the Great Western Railway Company inquiring relative to the state of the line between Swindon and Cirencester.

SIR,

Board of Trade, 21st December, 1841.

I AM directed, &c., to inform you that it has been represented to their Lordships by a gentleman who recently travelled on the Cheltenham and Great Western Railway from Swindon to Cirencester, that that line is in a very dangerous state. It is stated, "that one line of rails has slipped for a mile or two completely away, and the trains travel on the other line, which appears just hanging by a thread, and this over a precipice of 40 to 50 feet." Their Lordships will be glad to receive the observations of the Directors on this statement, and to be informed what is the present state of the line, and whether such precautions have been taken as enable the Directors to guarantee the safety of the public.

I am, &c.

The Secretary of the Great Western
Railway Company.

S. LAING.

CALLING the attention of this Department to the present state of the Branch Line of the Great Western Railway from Swindon to Cirencester.

SIR,

Springfield, Lyme Regis,
Dorset, 15th December, 1841.

UPON the information of a friend who has lately travelled by the Great Western Railway from London to Cheltenham, I beg to call the attention of the Railway Department of the Board of Trade to the present state of the branch line from Swindon to Cirencester.

I have &c.,

G. R. Porter, Esq.
&c. &c. &c.

W. M. TAITT.

LETTER sent to W. M. Taitt, Esq., in reply to his Letter relative to the Branch Line of the Great Western Railway from Swindon to Cirencester.

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SIR,

Board of Trade, 16th December, 1841.

IN reply to your Letter of the 15th December, calling the attention of the Railway Department of the Board of Trade to the state of the branch line of the Great Western Railway from Swindon to Cirencester, I am directed by the Lords, &c., to request that you will have the goodness to send a more detailed statement specifying the particulars to which you think their Lordships' attention ought to be specially directed.

I am &c.

S. LAING.

W. Taitt, Esq.
&c. &c.

IN reply to letter from this Office of the 16th December relative to the state of the Branch Line of the Great Western Railway from Swindon to Cirencester.

Springfield, Lyme Regis,
Dorset, 18th December, 1841.

SIR,

IN reply to your letter of the 16th instant, requesting particulars as to the state of the branch line of railway between Swindon and Cirencester, I beg to inform you that my information was derived from a private letter, from which the following is an extract:—"Cheltenham, Dec. 6, 1841.—I returned by the railway, and as far as Swindon all was very well, notwithstanding the wet; but from Swindon to Cirencester I was horrified at seeing the road I was passing over, and nothing should tempt me to do it again. One line of rails has slipped for a mile or two completely away, and the trains travel on the other line, which appears just hanging by a thread, and this on a precipice of 40 to 50 feet."

I remain, &c.,

W. M. TAITT.

S. Laing, Esq.,
&c. &c.

IN reply to Letter from this Office of the 21st instant, relative to the state of the Line between Swindon and Cirencester; also enclosing two Reports from the Company's Engineer.

SIR,

London Terminus, Paddington, 27th Dec. 1841.

I HAVE laid before the Directors your letter of the 21st instant, acquainting them that a gentleman who has recently travelled on the Cheltenham and Great Western Railway between Swindon and Cirencester had represented to the Lords of the Committee of Privy Council for Trade, that "one line of rails had slipped for a mile or two completely away, and that the trains travel on the other line, which appears just hanging by a thread over a precipice of 40 to 50 feet," in consequence of which their Lordships requested further information on the subject.

I am desired, in reply thereto, to transmit to you a report from the engineer-in-chief addressed to the Directors on the 24th ultimo, together with an extract from a former report made by Mr. Brunel to the Directors of the Cheltenham and Great Western Union Railway on the same point in October last. From these two official documents, and from subsequent inspection of the embankment, which is still under constant repair, it may be confidently stated that every exertion is used to render the works permanently secure on that portion of the line which has undoubtedly required the anxious care and attention of the Company's servants.

The measures that have been adopted to insure safety consist of the unremitted labour of a large force of men to pack and maintain the level of the single line of rails upon which the trains pass, while the other line is devoted to the conveyance of materials for making good the embankment; the employment of additional police constables to watch the line, and give notice to the trains in case of any insecurity; and, lastly, the enforcement of the greatest caution on the part of the engine-drivers and conductors by cutting off steam to pass at a very slow speed indeed over that portion of the line where the slips have principally manifested themselves.

These precautions have, in fact, been found effectual, as no accident whatever has happened where the line has been so worked, and where the danger seems to have been most apprehended by the gentleman whose representation has been quoted in your letter. I need scarcely add that the Directors consider it to be a very great exaggeration of the true circumstances of the case.

I have, &c.,

CHAS. A. SAUNDERS, Sec.

S. Laing, Esq.,
&c. &c.

EXTRACT of the Engineer's Report to the Directors of the Cheltenham and Great Western Union Railway, dated 26th October, 1841.

"SHORTLY after the last half-yearly meeting, at the end of the same month, the line between Swindon and Cirencester was opened for public traffic. At that time the difficulties which we had experienced from slips in the Swindon embankment, and which were referred to in my Report at that meeting, had so much diminished, and all movements in the slips so completely

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ceased, that there appeared no ground to anticipate any difficulty in maintaining the newly-formed bank at the slips, and every precaution was taken to secure them. The movement, however, unfortunately recommenced, and the slips even extended themselves to the adjoining parts of the embankment; and the settlement of the east or up-line was so considerable, and the quantities of materials required to maintain both lines in good order was in consequence so great, that it became necessary to cross the traffic on to the west line at this point, and to devote the other to the carrying of material. By this means it has been comparatively easy to maintain the one line in good working order, while the work of repair upon the other has been carried on more quickly than it otherwise would be, and without any chance of interruption to, or interference with, the traffic. The line thus used for ballast waggons, and for the works generally, has not, of course, been maintained in levels and packing, and the appearance of it may consequently have given rise to exaggerated reports of the slips and the state of the embankment; but the fact that the traffic has been carried on steadily, and without a single case of interruption at this point, ought to have been a conclusive and satisfactory proof, even to those unacquainted with the real state of the case, that the public were not sufferers by the difficulties which we had to contend with. The means taken to secure the bank have hitherto proved efficient; and had the weather been moderately favourable, the whole would by this time have been completed. At our present rate of proceeding, I apprehend five or six weeks must elapse before this can be effected; but if a change of weather, which, after the long excessively wet season we have suffered under, should happily take place, a less time will suffice to bring both lines into good working order. The arrangements which have been made by the Great Western Railway Company for working this part of the line with one train only at a time has, of course, insured perfect safety to the public.

Upon the state of the whole of the rest of the line, I am happy to say I can report most favourably. Notwithstanding the very trying season which has rendered it most laborious to maintain the lines upon all the railways in the kingdom, we have suffered less inconvenience than could have been anticipated; and we may fairly hope, when moderately fair weather returns, to have the line in exceedingly good order."

J. K. BRUNEL.

REPORT of Mr. Brunel to the Great Western Railway Company relative to the Swindon Embankment.

GENTLEMEN,

18, Duke Street, 24th November, 1841.

IN compliance with your directions, I now lay before you a report upon the state of the Swindon embankment of the Cheltenham and Great Western Railway.

This embankment, which is about $1\frac{1}{4}$ miles in length, and averaging about 20 feet in height, nowhere exceeding 24 feet, was formed originally of clay obtained from side cutting. The embankment was made of full width, the slopes good, and a wide bank left between the foot of the bank and the side-cutting. In fact, in the setting out or designing of the work I do not feel that any precaution was omitted, excepting so far as the formation of an embankment of clay by barrow work under any but the most favourable circumstances may be considered injudicious. Certainly my subsequent experience in works under my own direction, and observation upon others, have convinced me that if an embankment so formed suffers more than any other from the effects of continued wet during its formation, or before it is consolidated, the loose and divided state in which the separate lumps of clay are thrown together from the barrow, instead of being compressed by the fall from the waggon at the tip-head, easily accounts for this; besides the circumstance of the surface being generally unavoidably left in a much more irregular form, and less capable of being drained.

Unfortunately, during the formation of a great portion of this embankment, the season was excessively wet. Several small slips occurred in the following year, and in repairing these slips the interior of the bank was found to be saturated with water, and in a soft, almost fluid, state. Still the means taken to remedy the slips appeared effectual. Large portions of the slopes of the embankment were burnt, and the masses of burnt clay thus formed appeared capable of supporting the pressure of the soft clay within. Further precautions were subsequently taken. Portions of the side cutting, where the foundation of the embankment had given way, were filled up, and the embankment made good everywhere with good dry rubble and sand brought for that purpose. Everything was done which I considered desirable to ensure the permanence of the work. Immediately after the opening of the line, however, whether in consequence of the working, or from other causes the bank again began to move, the slips being almost exclusively confined to the up or east side. It appeared most prudent to abandon the attempt of keeping up this line for the running of the trains, to bestow all the attention to the down line, and to use the other for the purpose of bringing materials for the maintenance and restoration of the embankment. The work has been proceeded with ever since as vigorously as the circumstances would admit; the whole of the soft material is being removed or forced out; the side cuttings are being filled up; a dry stone wall built at the foot of the slip; and the embankment almost reformed of rubble. Crossings have been put in so as to allow of the trains proceeding without backing, or entering the Swindon station on the wrong line; and every precaution has been taken to enable the single line at this part to be worked with perfect security, and with very little inconvenience.

Some slight symptoms of movement have shown themselves on one or two occasions on the west side, but these have hitherto been stopped by being immediately repaired, and strong measures adopted for remedying them.

The season has unfortunately continued to be most adverse, but I hope that, in about a month, the whole may be completed, and both lines restored.

The Directors of the
Great Western Railway Company.

I have, &c.,

J. K. BRUNEL.

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Great Western.

LETTER sent to W. M. Taitt, Esq., in reply to his Letter of the 18th December, relative to the state of the Swindon Embankment.

SIR,

Board of Trade, 30th December, 1841.

WITH reference to your letter of the 18th December, I am directed, &c., to inform you that their Lordships have made inquiries relative to the state of the works on the Cheltenham and Great Western Railway, and that the information received from the directors appears to be satisfactory as to the precautions taken to ensure the public safety in passing over the Swindon embankment, alluded to by your correspondent. Their Lordships have nevertheless thought it expedient to direct the Inspector-general to examine personally the part of the line which is in an insecure state.

I am, &c.

S. LAING.

W. Taitt, Esq.,
&c. &c.

REPORT of Major-General Pasley on the present state of the Swindon Embankment of the Cirencester Branch of the Great Western Railway.

MY LORD,

Board of Trade, 14th January, 1842.

I PROCEEDED yesterday to Swindon to examine the state of the embankment there at the commencement of the Cirencester branch of the Great Western Railway, and I have the pleasure of reporting that though only one of the two lines of rails is now in use, it is in a most satisfactory state, being in the best condition, and every necessary precaution having been taken to avoid accidents, for a steam-engine is kept always in readiness at the Swindon station, which accompanies each train going or coming to or from Cirencester; and I am assured that the strictest orders have been given, that none of those trains are to move along the embankment until this independent engine, if not on the spot, comes back to attend them; and as the same engine is always employed on this duty, and signal men are stationed at both extremities of the single line of railway on the embankment, I consider this portion of the Cirencester branch to be as safe as any other part of the railway.

In respect to the complaint made of the state of this branch in a letter addressed to Mr. Laing, in which it is alleged, "that a passenger was horrified at seeing the road he was passing over, and nothing would tempt him to do it again, for one line of rails had slipped for a mile or two completely away, and the trains travelled on the other line, which appeared just hanging by a thread, and this on a precipice of 40 to 50 feet," I must observe that there was very considerable exaggeration, both of the height of the embankment and of the length of the defective part of the railway, the former of which is only half of the above dimensions, and the latter far less than the distance specified; yet I have no doubt that the person who made the complaint expressed his feelings with good faith; for, unless explained, the actual state of the embankment at the time must have appeared very critical, as described in Mr. Brunel's reports of the 26th October and 24th November last, which I consider creditable to him, as having been strictly accurate, and nothing unfavourable, diminished or palliated.

This embankment was made of a fine blue or brown clay, obtained from cuttings on each side of the line, and which, consequently, was wheeled up in forming it, so that the work was not so well consolidated, as if the clay had been tipped over from a higher level. Still, as the general height was moderate, the breadth at top ample, and the slopes on each side in the proportion of two to one, no blame can be attached to the original design of this embankment, for it is only our late experience, after the incessant rains of last autumn (as I said in my report on the Croydon Railway) that has developed the disadvantages of deep cuttings and embankments in certain kinds of clay, even at very moderate slopes.

Fortunately the ground on the western side of the embankment remained firm, so that the slips took place on the eastern side only, where the clay, almost in a fluid state, gave way, and moved towards the adjacent cutting, this movement taking place below the surface, as was proved by the remarkable fact that some very strong piles which had been driven at the bottom of the embankment were forced forward out of their original line, moving along with the clay; and in one part in particular, some of them are now to be seen 70 feet in advance of their former position. This movement was described to me as having been very slow, so that if carefully watched, and men be stationed to stop the trains, no danger can arise from it; but it was so powerful on the east side of the embankment, that the ground immediately under the rails there sunk not less than three feet in 24 hours in the most unfavourable point; and no doubt the passenger, whose complaint was before noticed, must have passed at the period when the movement below that led to this effect was in progress.

To make good the embankment, Mr. Brunel has caused soil of a better quality to be brought from a hill at the north end of it, and to be continually laid upon the east side of it, using the rails on that side for the transport of this earth; and having found piling to be of little use, he has directed a dry wall of rubble stone, 12 feet thick, to be built at the bottom of the slope to the depth of 10 feet, which is equal to that of the cutting, as a retaining wall, to

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prevent the further movement of the base of his embankment towards the ditch or deep cutting on that side; which, as a further precaution, he has ordered to be filled up opposite to those parts where the greatest movement of the moist clay took place. These measures will, no doubt, prove effectual; for, as I said before, the western line of rails is perfect throughout, and the eastern line is now only about 15 inches lower than the other in the most defective part, and is being gradually brought up to its proper level, which Mr. Brunel hopes to accomplish in four or five weeks.

Mr. Saunders, the secretary of the Great Western Railway, accompanied me as far as Swindon, where Mr. Brunel, the engineer-in-chief, and his assistant, the resident engineer of the Cirencester Branch met me, together with Mr. Sage, the chairman of the Great Western and Cheltenham Union Railway Company, who afforded me every aid that I could desire, in making my inspection.

On my return from Swindon the rails were covered with snow, which had fallen continually during the day, and somewhat retarded but did not stop the progress of the train.

The Earl of Ripon,
&c. &c. &c.

I have, &c.

C. W. PASLEY,
Major-General, &c.No. 11.
London & Croydon.

No. 11.

LONDON AND CROYDON RAILWAY.

LETTER sent to the London and Croydon Railway Company, relative to the Evidence at the Trial of the Engine-driver, Goldsmith.

SIR,

Board of Trade, 1st January, 1842.

I AM directed, &c. to inform you that their Lordships have had under their consideration the evidence, at the trial of Goldsmith, the engine-driver, charged with having occasioned the late accident on the Croydon Railway. From a perusal of this evidence, their Lordships are led to the conclusion, that it would be exceedingly desirable that fixed signal-posts and signals of such height and construction that they could not be mistaken for hand lanterns, or other accidental lights, should be erected at each station where trains stop, and invariably turned on whenever a train stops, and for a short time after it has started. This plan, which is adopted on many of the leading lines, appears peculiarly desirable on a line like the Croydon, which combines considerable local traffic, with that of the Brighton Railway. Their Lordships further observe, that the construction and position of the tail lamps used on the Croydon line appear defective, and that it is very important that a lamp or lamps, so situated as not to be liable to be casually obscured, should be affixed to the hind carriage of every train. I am to request that you will take the earliest opportunity of calling the attention of the Directors to the above suggestions.

I am, &c.

The Secretary of the London and Croydon
Railway Company.

S. LAING.

IN reply to Letter from this Office, of the 1st January, 1842, relative to the erection of Signal Posts, &c. on the Line.

SIR,

7th January, 1842.

THE letter which I had the honour to receive from you on the 3rd instant, dated the 1st, I laid before the Board of Directors yesterday, and I am instructed to reply, for the information of the Lords of the Committee of Privy Council for Trade, that the erection of signal posts on the Croydon Railway, of the nature referred to, has for some time been in hand, two having been erected before the communication from their Lordships was received; and the only cause that all were not finished and in operation at the beginning of November was, the inability of the engineer to have the materials conveyed to the intermediate stations, in consequence of a large slip of earth which obstructed the line.

Their Lordships will thus see that the expediency of such a measure had previously occurred to the Board of Directors, from their own experience on this railway, before the late accident had exhibited its propriety.

An improvement in the tail lamps has also been ordered by the Board of Directors.

I have, &c.

S. Laing, Esq.,
&c. &c.R. S. YOUNG,
Secretary.

REPORT of Major-General Pasley, upon the recent Slip on the Croydon Railway, near New Cross.

MY LORD,

Board of Trade, Whitehall, 12th January, 1842.

I THIS day examined the state of the Croydon Railway, a little beyond New Cross, where a second slip of earth has taken place, similar to that which occurred in November last, and nearly in continuation of it, which has covered the whole width of the railway to the extreme depth of eight feet, for about 120 feet in length, so that the passage of the trains is obstructed at that point; but by the judicious arrangements of the Railway Company this is attended with little inconvenience to passengers, for whose use a gallery has been made, with a flooring of planks, and protected from rain by canvas.

The original slope of the sides of the deep cutting where this slip took place was two of

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base to one of height, and they had stood for more than two years without any slip of such magnitude as to prevent the passage of the trains through this cutting until lately, when the continued rains have produced this unfavourable effect, which I do not think that any engineer could have anticipated beforehand, for it is only our late experience that has developed the disadvantages of deep cuttings and high embankments in certain kinds of clay, even at very moderate slopes. No blame, therefore, attaches to the original construction of this railway, though the extraordinary slips that have occurred recently will be a lesson to put engineers on their guard for the future in working in such soil. On the east side of the cutting, the extreme height was rather more than 100 feet in one part, with 200 feet of slope.

A great number of workmen, I was informed more than 1000, are actively employed in the day time, and a smaller number by night, in removing the earth, which now covers the railway; and I am satisfied with the skill and judgment with which the work is carried on. I made minute inquiries respecting the movements of these immense masses of earth, and was informed by Mr. Gregory, the resident engineer, who had witnessed them, that they do not fall upon the railway all at once, but creep down as it were, so gradually, that if properly watched, there is no danger of their overwhelming, or even injuring a train.

I also made inquiries in reference to the accident, which occurred on the 17th of last month, when an engine under the charge of Charles Goldsmith, ran into the Croydon train, which was partly caused by the red light in rear of that train being obscured by a man standing up in a truck behind it, so that Goldsmith had not proper notice of the danger. In order to prevent this for the future, the directors have ordered their hind carriage to have two red lights attached to it on each side of the top, which could not have been both hid under the like circumstances. They have also directed posts to be set up with signals by day, and coloured lamps by night, at each station, which are too high to be obscured by persons or carriages passing. I saw two which have been erected, but are not yet entirely fitted with the lamps, &c., and another preparing in one of the workshops of the Company. Those which I saw are about 30 feet in height.

Mr. Wilkinson, the chairman, and two other officers of the Company, as well as the resident engineer, favoured me with their company, and afforded me every facility of inspecting their line, together with information upon every point that I could desire, explaining, at the same time, the strata of clay, &c. in the sides of these cuttings, and showing me a chemical report upon the qualities of those earths, when acted upon by water, by Mr. Phillips, curator of the Museum of Economic Geology, who was requested to analyze them; but to enter into these particulars would be superfluous.

To conclude, I have pleasure in recording my belief that the measures of the Directors and engineers of the Company are well calculated not only to remove the obstruction on the railway with all despatch, but also to provide for the safety of passengers by their trains.

I have, &c.

The Earl of Ripon,
&c. &c. &c.

C. W. PASLEY, Major-General, &c.

No. 12.

LIVERPOOL AND MANCHESTER RAILWAY.

No. 12.
Liverpool and
Manchester.

LETTER sent to the Liverpool and Manchester Railway Company, with reference to the late fatal Accident, and relative to erecting a Foot Bridge at the Newton Junction.

SIR,

Board of Trade, 5th January, 1842.

WITH reference to the recent fatal accident at the Newton junction of the Liverpool and Manchester railway, I am directed, &c. to inform you, that their Lordships understand that the verdict of the jury was accompanied by a recommendation that a foot bridge should be erected by the Company at the crossing in question. Their Lordships consider that the erection of such a bridge would, if practicable, be very desirable; and they request to be informed whether it is the intention of the Directors to carry the recommendation of the jury into effect.

I am, &c.

The Secretary of the Liverpool and Manchester
Railway Company.

S. LAING.

Lime-street Station, Liverpool,
11th January, 1842.

SIR,

YOUR communication of the 5th has been laid before the Directors, and I am instructed to explain to you their sentiments on the qualified recommendation of the coroner's jury, that a foot bridge should be erected at Newton Junction.

The Directors would be happy to co-operate in any measure calculated to ensure the public safety. In reference to the Newton Junction, they consider that the erection of a foot bridge would be altogether an inefficient procedure. There is a public carriage road, crossing, on the level, which cannot be stopped; and it would be vain to expect that the public would mount 16 or 18 feet, so long as they have a legal right to pass on the level. The incautious portion of the public would be the least likely to take advantage of the bridge, and with a moderate degree of caution, a bridge is not required. The Directors have endeavoured to take a practical view of the proposal thus brought under their consideration, and they are of opinion that a foot bridge, in the locality referred to, would not be calculated to accomplish the desired object.

I have, &c.

S. Laing, Esq.,
&c. &c.

H. BOOTH.

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No. 13.

NEWCASTLE AND CARLISLE RAILWAY.

LETTER sent to the Newcastle and Carlisle Railway Company, relative to the Accident to a Man being Struck by an Engine while in the act of opening a Gate across the Line.

SIR,

Board of Trade, 2nd November, 1841.

WITH reference to the return made to the Lords, &c., of an accident by which a servant of the Newcastle and Railway Company lost his life on the 27th October, owing to being struck by an engine while in the act of opening a gate for it to pass through, I am directed by their Lordships to observe, that in their letter of the 27th September, it was stated to the Directors that Sir F. Smith, who had recently visited the line, had reported his opinion that the practice of shutting the gates across the railway was attended with danger, and that their Lordships thought it indispensable that the provisions of the 2 and 3 Vict., c. 45, should be complied with by erecting proper gates, and stationing proper persons at each level crossing with strict orders to keep the gates shut across the road, unless when opened for the purpose of allowing carriages, &c., to cross the railway.

In reply to this communication, their Lordships received a letter dated the 12th October, in which it was stated, that "as their Lordships consider it indispensable that the provisions of the 2 and 3 Vict., c. 45, should be complied with, the Directors now give an assurance that it shall be carried into effect."

From the account of the accident, it would appear that this insurance had not been complied with, and that the loss of life was occasioned by a persistence in the practice of keeping the gates closed across the railway. Their Lordships wish to be informed what regulation as to the closing of gates was in force at the time of the accident, and they also request that a complete copy of the evidence at the coroner's inquest may be forwarded to this Department.

I have, &c.,

S. Laing.

The Secretary of the Newcastle and Carlisle
Railway Company.

IN reply to Letter from this Office of the 2nd November, relative to shutting the Gates across the Line.

SIR,

Newcastle-upon Tyne, November 4th, 1841.

IN answer to your letter received yesterday, I have to reply that the gates at which the accident happened were managed in the same way as the cases of exception mentioned in the return to the inquiries by the Board of Trade, and transmitted on the 12th day of October last, being the answer to question No. 2.

It is the intention of the Directors to carry into effect the provisions of the 2nd and 3rd Vict., c. 45, as promised in their assurance, and steps are being taken to that effect; but it must be borne in mind that there are 22 road crossings that will require considerable alterations to enable the provisions of the Act to be complied with, and that the engineer is engaged in planning gates of new constructions for some parts, and estimating the costs of bridges for others to avoid level crossings, and that a Committee of the Directors are now engaged in determining the best mode of doing away with level crossings where possible, and for the most eligible plan of gates. From the numerous crossings, it must be evident that they cannot all be done at once, but they will be commenced with and carried on with all despatch that the circumstances will allow.

It may be remarked, that the Directors commenced forming the gates on a mode similar to that described by the 2nd and 3rd Vict., c. 45, in the year 1836, in the opening of the first 20 miles from Carlisle eastward, but that it was much objected to by many persons using the roads, and a notice of objection was served in one instance by a resident magistrate, and that the Directors then determined to proceed on their present plan, and it may also be remarked, that no accident of the kind alluded to in your letter of the 2nd instant has ever occurred before, and that the whole line has been in use for three years and a half, and previously to the opening of the whole, two-thirds had been in use above two years.

I am, &c.,

JOHN ADAMSON, Secretary to the Directors.

S. Laing, Esq.,
&c. &c.No. 14
Dundee and
Arbroath.

No. 14.

DUNDEE AND ARBROATH RAILWAY.

LETTER sent to the Dundee and Arbroath Railway Company, relative to the Death of Margaret Stevens on the 11th of October.

SIR,

Board of Trade, 23rd November, 1841.

I AM directed, &c., to inform you, that a copy of the precognition taken in the case of Margaret Stevens, killed on the Dundee and Arbroath Railway on the 11th October, has been transmitted to their Lordships by the Lord Advocate, with a letter stating that, in his Lordship's opinion, the inhabitants of the populous villages of Westhaven and Carnoustie are daily exposed to danger from the want of the means of access across the railway and of due management in regard to it.

Their Lordships observe, from the evidence, that the railway passes through the village of Westhaven and close to the village of Carnoustie, cutting off the latter from the sea and the

school-house; that the inhabitants are obliged to be constantly passing and repassing the rails at all hours; that as many as 10 trains pass daily and at a speed which, in the case of the fatal accident in question, was as high as 35 miles an hour; that the danger is increased in the case of the village of Westhaven by a curve which prevents approaching trains and engines from being seen until close to the crossing; that no police are employed by the Company to prevent trespassing and to warn the people of the approach of trains, that no gatekeepers are stationed, and that the only protection afforded at the foot crossings is by wicket-gates which do not lock and which generally stand open. The witnesses, among whom are several servants of the Company, state, that many narrow escapes have taken place, and they all concur in considering the crossings a great and constant source of danger. The alterations suggested for putting an end to a state of things so fraught with danger, are:—

1st. To carry a cart road over the railway by an arch at each village as a substitute for level crossings, building up the present gates and raising the height of the fencing wall so as to prevent the possibility of children, &c., trespassing or falling upon the line.

2ndly. To station a sufficient number of policemen and gatekeepers, and erect proper gates so as to prevent trespassing and attempts to cross the line when trains are approaching; to reduce the speed of trains while passing through the villages to 10 or 12 miles an hour, and to make it an invariable rule, that engine-men shall sound the whistle on approaching the crossings.

Under the circumstances in which the villages are placed, in respect of the line of the railway, their Lordships consider that there can be no security for the public, and particularly for the resident inhabitants of that neighbourhood, unless the proposed bridges are constructed; and although their Lordships are aware that they have no power absolutely to enjoin the adoption of this alteration, they nevertheless feel convinced that the Directors will not hesitate to adopt an improvement which alone can satisfy the Lords of the Committee and the public in general that the safety of the public is duly consulted.

In the mean time it appears indispensable that the other precautions relative to diminished speed, watching the line, and attending to the gates, should be rigorously enforced.

I am, &c.,

The Secretary of the Dundee and Arbroath
Railway Company.

S. Laing.

IN reply to Letter from this Office of the 23rd Instant, relative to the Precognition Papers on the Death of Margaret Stevens on the 11th October.

Dundee and Arbroath Railway Company,
November 26, 1841.

SIR,

WE have received your letter of the 23rd current, conveying to us the views of the Lords of the Committee of the Privy Council for Trade, in regard to the case of Margaret Stevens, who was accidentally killed on this line of railway on the 11th October last, and upon the precautions which seem to them to be necessary for insuring safety to the public in the neighbourhood of the villages of Carneustie and Westhaven.

We have submitted this communication to the Directors of this Company, who request us to assure their Lordships, through you, of their great anxiety to adopt every reasonable precaution which can be pointed out for preventing accidents upon the line of railway under their charge. They are however satisfied that the circumstances attending the late accident, and the position and fencing of the line at the villages mentioned have not been fairly or impartially represented, but must have been very much exaggerated. Before the Directors can make any satisfactory reply to your letter, they would require a copy of the precognition and letter which have been submitted to the Lords' Committee, and which you can have the goodness to forward to us.

We may mention that we do not believe that there is a railway in existence where so few accidents have taken place as upon this line; this is the only fatal accident which has occurred, and very little investigation will satisfy their Lordships that the sufferer alone was to blame, and that no fault whatever could be attributed to the Company.

We have, &c.,

S. Laing, Esq.,
&c. &c.

SHIELL and SMALL, Secretaries.

LETTER sent to the Dundee and Arbroath Railway Company, in reply to their Letter of the 27th November, relative to the Precognition Papers in the case of Margaret Stevens.

GENTLEMEN,

December 4, 1841.

IN reply to your letter of the 26th November, requesting to be furnished with a copy of the precognition taken in the case of the late fatal accident on the Dundee and Arbroath Railway, I am directed, &c., to inform you that the Lord Advocate considers it inconsistent with the rule and practice of the law of Scotland to communicate such precognition, or any part of it, to the Company, the more especially as his Lordship has directed criminal proceedings to be taken against the conductor of the train, when the Directors will have an opportunity of hearing the whole circumstances of the case detailed upon oath before a jury.

Their Lordships further direct me to state that the recommendations contained in their letter of the 29th November were founded, not so much on the particular accident in question as on the general circumstances of the case which in their Lordships' opinion make the

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III
Reports on
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substitution of bridges for the present level crossings at the villages of Westhaven and Carnoustie the only effectual means of providing for the public safety.

The Secretaries of the Dundee and Arbroath
Railway Company.

I am, &c.,

S. LAING.

IN reply to Letter from this Office of the 4th December.

SIR,

WE have your communication of the 4th, refusing the Dundee and Arbroath Railway Company a perusal of the precognition which was before the Lords' Committee when they came to the resolutions contained in your letter of the 23rd ultimo. This we regret, as we feel assured that we could have satisfied their Lordships that this Company was free from blame in regard to the accident referred to. As the Company are, however, desirous of meeting the views of their Lordships, they have requested us to say—

1. That at Westhaven they have applied to Lord Panmure to shut up the crossing upon his property at which the accident occurred, which will obviate any objection on this head.

2. In regard to Carnoustie, you seem to have been misinformed. You say the school-house is separated from the village by the railway. Now this is not the case; there is not a single house on the south side of the railway in that village, and from the nature of the ground, were a bridge required, it would be impracticable to make one; but as the railway runs on one side of the village entirely, the Company respectfully submits that no bridge is wanted there for the public safety. There is a long straight line at that point, so that ample time is given to parties crossing to get off the line before the trains come up.

3. As to keeping the line, there are twenty men constantly employed along the line, and they act as constables in keeping the gates shut and apprehending trespassers. Upon a line of 16½ miles in length, it is submitted that nothing more can be required.

4. The line is fenced from end to end, and the gates kept in the best order. Besides, it must be kept in view that the line stretches along the margin of the Tay, through the lands where there is almost no traffic over the line.

5. As to the speed,—the mail train must, in pursuance of the orders of the Postmaster-general, travel at the rate of 30 to 35 miles per hour, but the other trains, in approaching the village in question, do not exceed above one-half of that speed.

6. The whistle is invariably sounded on approaching the villages and in taking curves, and the Company generally adopt every precaution which occurs to them likely to prevent accident.

We hope the foregoing explanations will be deemed satisfactory, but should anything transpire in the trial to which you refer, calling for further precautions, they will at once be adopted.

We have, &c.,

S. Laing, Esq.,
&c. &c.

SHIELL and SMALL.

LETTER sent to the Dundee and Arbroath Railway Company, relative to erecting a Bridge at the Level Crossing at the Village of Westhaven.

GENTLEMEN,

January 18, 1842.

I AM directed, &c., to inform you that on a consideration of the evidence at the trial of James Boyd, the driver in charge of the engine by which Margaret Stevens was run over in the village of Westhaven, it appears to their Lordships that the necessity for the measure formerly recommended by them, viz., the erection of a bridge, is fully established, and I am accordingly directed to inquire whether the Directors contemplate taking any steps for that purpose.

I am, &c.,

The Secretaries of the Dundee and Arbroath
Railway Company.

S. LAING.

RELATIVE to the Erection of a Bridge at the Level Crossing at the Village of Westhaven.

SIR,

Dundee, January 17, 1842.

WE sent you a copy of the newspaper containing a report of the trial in James Boyd's case.

For the information of their Lordships, we think it proper to mention—

1. The crossing at which the accident occurred has been shut up.
2. A man has been stationed to attend to the crossings when the trains pass.
3. Plans of a bridge have been ordered, and application made to Lord Panmure for permission to build the bridge and shut up the surface crossings in the village of Westhaven.

These precautions we think substantially meet the requisition of their Lordships.

At the trial, the Lord Advocate seemed to think that the school-house at Carnoustie was on the south or opposite side of the line from the village, whereas there is not a single house on the south side at that place. The sea shore at Carnoustie is a barren, bleak sand, to which few people resort, save in summer. The line here is straight, so that the trains can be seen at a great distance, enabling parties to cross on the surface with perfect safety.

The Directors request us to assure their Lordships of the anxiety which they feel to have this line managed with every regard to the public safety.

We have, &c.,

S. Laing, Esq.,
&c. &c.

SHIELL and SMALL.

IV.—RETURNS RELATING TO LEVEL CROSSINGS.

No. 1.

EASTERN COUNTIES RAILWAY.

Eastern Counties Railway, High Street, Shoreditch,
London, 29th Sept. 1841.

SIR,

I HAVE the honour to acknowledge the receipt of your letter of the 28th instant; and in reply, I beg to state that there are no turnpike roads or highways crossed on a level by this railway, as at present opened for public traffic. In every instance of *occupation* crossings occurring, good and sufficient gates are, however, erected at each end of such crossings.

I may observe that, at one of these occupation crossings at Stratford, a distant signal is attached to the gates, exhibiting the plan which this Company purposes to adopt for insuring safety at the public crossings, as occasion shall arise on a further opening of the line for traffic.

I have, &c.

G. R. Porter, Esq.,
&c. &c. &c.

ANTH. BULKELEY, Secretary.

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Returns relating to
Level Crossings.

No. 1.

Eastern Counties.

No. 2.

YORK AND NORTH MIDLAND RAILWAY.

CIRCULAR of the 28th September, returned with Answers relative to Level Crossings.

29th Sept. 1841.

1. How many turnpike roads and highways are crossed on a level by the York and North Midland Railway?—Dreghouses, 1; Copmanthorpe, 2; Bolton, 3; Alleskelf, 2; Fenton, 1; Sherburn, 1; Hillam, 1; Castleford, 1. Total, 12.

2. Are good and sufficient gates erected across each end of such turnpikes or highways at each of such crossings, in conformity with the 2nd and 3rd of Vict. cap. 45?—Yes.

3. Are gatekeepers stationed at each of such crossings, in conformity with the said Act?—Yes.

4. What wages do such gatekeepers receive? 17s. per week.—How many hours do they remain on duty? Twelve hours.—Have they any other employment? No, with the exception of giving the proper signals to the engine-men.

5. Are positive instructions given to such gatekeepers to keep such gates constantly shut across the roads, unless when opened by the gatekeeper to allow carriages, &c. to cross the railway?—Yes.

6. What other instructions are given to such gatekeepers?—Not to allow any carriage, horse, or any person, to cross the said railway if the train is in sight or hearing.

7. What instructions are given to engine-drivers as to precautions to be observed on approaching crossings?—To keep a good look-out, and to go slow until he sees the gatekeeper's signal that all is right.

G. R. Porter, Esq.
&c. &c. &c.

G. B.

No. 3.

DUNDEE AND ARBROATH RAILWAY.

Dundee and Arbroath Railway Company's Office,
Dundee, 1st October, 1841.

SIR,

IN compliance with the request contained in your letter of the 28th ultimo, I now send you the following answers to the questions therein put:—

1. Three highways cross this line of railway on a level.

2. Good and sufficient gates are erected across these highways at each of the crossings.

3. A gatekeeper is stationed constantly at the first crossing, but the other two are in charge of one person. He is quite able to attend to both of these crossings, as they are only 160 yards apart; and there is one of the intermediate stations situated between them, at which all the trains stop for passengers.

4. One gatekeeper receives 10s. per week, with dwelling-house and garden in addition: remains 13 hours on duty, and has no other employment. Another receives 13s. per week, and remains on duty 12 hours. This person has charge of the two crossings; and betwixt the trains he acts as a cleaner about the station.

5. The gatekeepers are required to be at their post 15 minutes before an approaching train is due, and to allow no person or vehicle to cross after the train has appeared in sight, or after he has heard the alarm-whistle, which is always sounded a quarter of a mile off. (At all the

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crossings on this line, with one exception, the trains can be seen approaching, in clear weather, half a mile off.)

6. Already answered.

7. The engineers are instructed to sound the alarm-whistle when approaching any crossing, and when at least a quarter of a mile off.

I am, &c.

G. R. Porter, Esq.,
&c. &c. &c.

ROBERT MARSHALL, Manager.

LETTER sent to the Secretary of the Dundee and Arbroath Railway Company, relative to Gatekeepers at Crossings.

SIR,

Board of Trade, 19th October.

WITH reference to your return of the 1st October to the circular issued by the Lords, &c. relative to level crossings, in which you state that two of the crossings are in charge of one person, I am directed by their Lordships to inform you that Sir F. Smith considers this practice unsafe, and that their Lordships recommend the Directors to station gatekeepers at each crossing.

I am, &c.

The Secretary of the Dundee and Arbroath
Railway Company.

S. LAING.

In reply to Letter from this Office of the 19th October, and stating that the Company have placed a Gatekeeper at each Level Crossing.

Dundee and Arbroath Railway Company's Office,
Dundee, 30th October, 1841.

SIR,

I AM in receipt of your letter of the 19th current; and, in reply, have to inform you that the Directors of this line of railway have now placed a gatekeeper at each level crossing, in accordance with the recommendation of the Lords of the Committee of Privy Council for Trade, and

I am, &c.

S. Laing, Esq.,
&c. &c.

ROB. MARSHALL, Manager.

No. 4.

Glasgow and Ayr.

No. 4.

GLASGOW AND AYR RAILWAY.

ANSWERS by the Glasgow, Paisley, Kilmarnock, and Ayr Railway Company, to Queries put to them by the Lords of the Committee of Privy Council for Trade, dated 28th September, 1841.

Glasgow, 2nd October, 1841.

I. No turnpike roads or highways are crossed by this line, except—

1. The Moss-parish road, between Glasgow and Paisley, where, on account of the small amount of cartage, a surface crossing was specially authorised to be made by Parliament in 1840, with the sanction of the Sheriff of Lanarkshire.
2. A road, about a mile from Ayr, which was in 1839 claimed to be a highway by the parish road trustees, and which was in 1840 specially authorised by Parliament to be diverted and carried over the railway, along with two other private roads (one in the outskirts of the town), by a single bridge. The site and plan of the bridge were directed to be submitted to the Sheriff of Ayrshire, who only finally settled them on the 21st September, 1841. The bridge has since been commenced.
3. There are two other roads, the one about five, and the other about nine miles from Ayr, used partially by adjoining farmers for carting manure from the sea.

II. Good and sufficient gates are placed across each end of the above roads, in conformity with 2 & 3 Vict. c. 45.

III. Gatekeepers are stationed at the Moss-road, in conformity with the said Act. The other road, not being a parish road, has not had a special gatekeeper.

IV. The wages of the gatekeeper are 12s. a-week. The hours of duty are from 7 A.M. to 10 P.M.

V. The instructions given to the gatekeeper are in conformity with those stated in the query.

VI. The gatekeeper has also instructions to stop any train if the line within sight of his station is not clear.

VII. A copy of the general instructions to the Company's servants, including those to engine-drivers, as to the precautions to be observed on approaching surface-crossings, is herewith sent.

Although not embraced in the above queries, it is proper to state that very great anxiety has been felt by the Directors in consequence of the risk of accidents at a point where Mr. J.

Taylor Gordon's private railway crosses the main line of the Ayrshire Railway, in Peebles Street, of Newton-Ayr. Mr. Gordon's railway is used for the passage of coal-waggons drawn by horses, and he states that about 300 pass in the day. It is leased by him from the magistrates of Newton at only 10*l.* per annum. It is not fenced. It crosses the great turnpike-road from Glasgow to Portpatrick by Kilmarnock and Ayr, on the level. It then runs along Peebles Street of Newton-Ayr, on the level, and crosses the Ayrshire Railway, also on the level, in front of their depôt, where the engines are necessarily kept moving about in order to prevent their steam from falling. The Ayrshire Railway Company, when in Parliament, in 1837, bound themselves by a formal deed to make a tunnel at whatever practicable place the magistrates of Newton should select to carry this private railway under their line. They have since repeatedly offered to do so, although at increased inconvenience to themselves, from their line being now opened; but the offer has not been accepted. They subsequently wished to put up gates across the private line, as required by their Act in the case of all surface-crossings, and as required by 2 & 3 Vict. c. 45, in the case of public roads; but Mr. T. Gordon obtained an interdict from the Sheriff against their doing so, and insisted on the gates being placed across their own main line. They afterwards wished to lay down on spare ground belonging to them, side rails, on which their engines might move whilst getting up their steam, so as to avoid the risk of accidents from using the main line for that purpose; but, on the plea that it would cause an additional breadth of crossing, they were again, on the application of Mr. J. T. Gordon, interdicted from doing so. These interdicts have been brought under review of the Court of Session, because the Company's engineer considers that it would be unsafe to place gates across the Ayrshire Railway, which is a public thoroughfare, and is not, like Mr. Gordon's private railway, worked by servants exclusively under the control of the proprietor; and because, if placed there, the engineer thinks that the private railway belonging to Mr. Gordon, being unfenced, would become a surface-crossing, which would be used by all the inhabitants of Newton, in preference to ascending the bridge which has been built in the neighbourhood for carrying Peebles Street over the railway. So strongly have the Directors felt the risk of accidents at this point, that they have given notice of their intention to apply to Parliament next year for some specific provision to regulate the crossing; and in the mean time they have a policeman stationed there half an hour before the passing of every train.

WILLIAM JOHNSTONE, Manager.

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IV.

Returns relating to Level Crossings.

No. 4.

Glasgow and Ayr.

IN reply to Letter from this Office of the 7th instant, relative to the crossing of a Private Railway over the Glasgow and Ayr Line.

SIR,

Edinburgh, October 15, 1841.

YOUR letter of the 7th instant, on the subject of the representation made by the Glasgow and Ayr Railway Company, to the Lords of the Committee of Privy Council for Trade, regarding the private railway leased by me from the Magistrates of Newton-Ayr, has been forwarded to me here, and I lose no time in assuring their Lordships that I have all along been most anxious that the crossing of my railway should be regulated, so as to provide, in the best possible way, for the safety of the public and the great traffic on my railway, and that it is the Railway Company alone who have prevented this. I cannot avoid, therefore, expressing my surprise at the very incorrect representation (to call it by no harsher appellation), which the Railway Company have made to their Lordships, and from which it would appear they have been led to take up an opinion that I was throwing obstacles in the way of proper means being taken to guard against danger to the public at the crossing.

In such circumstances, I trust I shall be pardoned for bringing the matter fully before their Lordships, to enable them to judge of the injustice of the charge that has been made against me.

The Railway Company having expressed an intention to put gates across my railway, and to throw the expense and responsibility of keeping these gates properly closed upon me, a proceeding which would have afforded no protection to the public, and which was in direct violation of a contract between them and me, and of the special clause inserted in their amended Act for the protection of my railway, I was under the necessity of presenting an application to the Sheriff of the county, praying for an interdict (injunction) against their proceedings, and also that they might be ordained to protect my traffic, and the public safety, by adopting the same precautions as were provided by their amended Act, for the protection of the traffic and public safety at the crossing of the Kilmarnock and Troon Railway, by placing gates at the end of their own line, and appointing a proper person to open and shut the same at the passing of the Railway Trains. To that petition the Company gave in answers, which were followed by replies for me. After considering these pleadings, and visiting and inspecting the crossing, the Sheriff-substitute on 21st April last, pronounced a judgment in the following terms:—
“The Sheriff-substitute having considered this process, with the writings produced, and visited and inspected the subject matter in dispute, in presence of the parties, and their agents, finds from the great number of waggons which pass and repass along the petitioner's railway, that it would be attended with danger to the lieges, were gates to be placed thereon as proposed by the defenders, and therefore grants the interdict craved in the petition, and declares the same perpetual. Finds as a matter of public safety that it is incumbent on the defenders to make and maintain a good and sufficient gate or gates across their line of railway, and to employ good and proper persons to open and shut such gate or gates, which shall only be shut across

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Glasgow and Ayr.

the petitioner's railway at the time of the passing of the locomotive engines and trains of the Glasgow, Paisley, Kilmarnock, and Ayr Railway Company, and to adopt the same precautions as are provided by the defenders' amended Act of incorporation for the protection of the traffic and public safety at the crossing of the Kilmarnock and Troon Railway, and decrees and ordains the defenders forthwith to do so. But in the circumstances of the case, finds no expenses due."

In place of acquiescing in this judgment, the Railway Company appealed to the Sheriff depute, who, on the 18th May last, dismissed the appeal, and added a note in the following terms:—"It seems to the Sheriff indispensable for the public safety, in all cases of crossing railways, where the locality is populous, and the transit of waggons frequent, that gates should be erected similar to those at Troon Railway, that is, closing the great line at all times except at the passing of the steam trains, and opened and shut by a careful officer on the spot, maintained by the Railway Company. The Glasgow and Ayr Railway has been hitherto honourably distinguished by exemption from accidents, and the Sheriff thinks that he consults their interest as well as that of the public in his present judgment."

The Company then carried the case into the Court of Session, where no judgment has yet been pronounced, although it is perfectly well known that the Company's legal advisers here, have told them that there is not the slightest chance of the Sheriff's judgments being altered.

While these proceedings were going on before the Sheriff, I was informed that the Company were about to take possession of part of the public road, and of my railway, and adjoining ground, on the west side of their line, and to lay additional lines across the same for racing their engines on, thereby greatly increasing the danger to the public. I was therefore under the necessity of presenting another petition for interdict against them, which having been also followed by answers and replies, the Sheriff-substitute upon considering the same and inspecting the premises, pronounced the following judgment on the 21st of April last. "The Sheriff-substitute having considered this process with the productions, and having visited and inspected the subject matter in dispute, in presence of the parties, and their agents, repels the defences, and finds that the defenders have no right to take, use, and enclose the public road, and the petitioner's railway, and adjoining ground, on the west side of their line, and to lay rails across the same for racing their engines thereon, or for any other purpose whatever, or to interfere with the petitioner's railway in any way at the point where it is crossed by the Glasgow, Paisley, Kilmarnock, and Ayr Railway. Finds that it would be attended with danger to the public, and would be prejudicial to the interests of the petitioners, were the defenders to take, use, and enclose, the piece of ground in dispute in the way proposed by them, and as pointed out at the inspection, and therefore declares the interdict perpetual, and deerns—but in the circumstances, finds no expenses due."

Against this the Company also appealed to the Sheriff-depute, and he again on the 18th of May, 1841, dismissed their appeal, adding the following note:—"The dangers incident to railway travelling are quite sufficient already, with all the care which can be used, on the great thoroughfares, and with the security of regular times of passing; but were the present proposal of the Company allowed, those dangers would be multiplied ten fold, by the irregular passage of the racing engines, in a populous locality, and in the frequent transit of the coal-waggons. This mode of getting up the steam by racing, if necessary, must be done in some other way."

This case they have also brought before the Court of Session, although they have likewise been advised that there is no chance of obtaining an alteration of the judgment.

From the preceding detail, their Lordships I think will be satisfied that the safety of the public would be completely provided for, if the Railway Company would obey the orders of the Sheriff, by placing gates at the end of their line, and employing proper persons to open and shut them; and I trust they will see cause in the discharge of their duty as guardians of the public safety immediately to call on the Railway Company to do so.

At the same time I have no objection whatever, if it shall be thought more conducive to the public safety, that my railway should be carried under, or over, the Ayr line, instead of crossing it upon a level as at present, provided the expense of doing so be borne by the Railway Company. By the Company acquiring the necessary property, my railway probably could be carried over the Ayr Railway on its present line, but from the nature of the ground, it is utterly impossible to carry it under it. So anxious am I indeed that every possible means should be taken to secure the public safety, that if the Railway Company can point out any place where my railway could be carried under theirs, upon a line equally advantageous for me, with my present one, I am quite willing instantly to allow them to change my line.

This I have all along expressed my willingness to consent to, and more than this I think their Lordships will not expect that I should do.

The statement that I have thus felt myself compelled to make, the accuracy of which cannot be disputed, will enable their Lordships to judge whether the Railway Company or I am to blame for the crossing of my railway being left in its present dangerous and unprotected state.

Should their Lordships wish any further information on the subject, I shall be happy to forward to them copies of the whole pleadings in the suits with the Railway Company.

I have, &c.

JOHN T. GORDON.

S. Laing, Esq.
&c. &c.

LETTER sent to the Clerk to the magistrates of Newton Ayr, relative to the Level Crossing of the Private Railway at Newton Ayr.

SIR,

Board of Trade, 21st October, 1841.

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No. 4.
Glasgow and Ayr.

IN reply to your letter of the 15th of October on the subject of the level crossing at Newton Ayr, I am directed, &c. to inform you that their Lordships have not the least intention of imputing any blame to the magistrates of Newton for acting in conformity with the decisions of the Sheriff-substitute, and Sheriff-deputy, and that they do not wish to interfere with regard to the gates while the question is pending before the Court of Session. Their Lordships are, however, decidedly of opinion that it would be most desirable for the public safety that the private railway should be carried either under or over the Glasgow and Ayr line, and they are therefore glad to find that the magistrates express their perfect willingness to co-operate in any fair arrangement with the Railway Company for this purpose. Their Lordships have expressed a similar opinion to the Railway Company, and they hope that it will be found practicable to come to some agreement by which the danger and inconvenience resulting from the level crossing may be obviated.

I am, &c.

S. LAING.

J. Brown, Esq.
Town Clerk of Newton.

Letter to the same effect written to Mr. Gordon.

LETTER sent to the Glasgow and Ayr Railway Company, relative to the Level Crossing of the private Railway at Newton Ayr.

SIR,

Board of Trade, 21st October, 1841.

WITH reference to the level crossing of the private railway at Newton Ayr, I am directed, &c., to inform you that their Lordships are most unwilling to interfere with regard to the questions which are pending judicially between Mr. T. Gordon and the Company, but that, being decidedly of opinion that it is most desirable for the public safety that the private railway should be carried either under or over the Glasgow and Ayr line, they feel themselves called upon to draw the notice of the Company to a communication which has been received from Mr. Gordon, stating, that he has no objection that his railway should be carried under or over the Ayr line, provided the expense of doing so was borne by the Railway Company; and that if the Railway Company can point out any place where this can be done upon a line equally advantageous for him with his present one, he is quite willing instantly to allow them to change his line.

The magistrates of Newton have equally expressed their readiness to agree to any fair arrangement for this purpose. Under these circumstances their Lordships would recommend that an attempt should be made by the Company to come to an amicable arrangement for removing the dangers and difficulties resulting from the present level crossing, by carrying the private railway either under or over their own line. Their Lordships trust that in the mean time the greatest precaution will be taken by the Company to avoid accidents at the crossing.

To the Secretary of the Glasgow and Ayr
Railway Company.

I am, &c.

S. LAING.

IN reply to Letter from this Office of the 21st instant, relative to the private Railway leased by J. T. Gordon, Esq., crossing the line at Newton Ayr.

SIR,

Railway Office, Glasgow, 26th October, 1841.

I beg leave to acknowledge the receipt of your communication of the 21st current, which I observed was despatched before the last report of the Glasgow and Ayrshire Railway Company could have reached you.

Along with that report, I sent you a copy of the formal deed of agreement concluded in 1837-8, between the magistrates of Newton, as proprietors of Mr. J. T. Gordon's Railway, and the Ayrshire Company, by which the former intimated their intention of deviating the line of their private railway (let at 10*l.* a-year) and recognised the equity of their being at the expense of doing so, whilst the latter undertook to build a tunnel of a specific height under their line, in order to allow it to pass. I venture to presume that the Board of Trade will accept this deed of agreement as affording the best evidence of what the parties considered the most equitable and reasonable arrangement between them, and will be satisfied with the assurance that the Ayrshire Railway Company have always been willing to implement it.

The magistrates of Newton, and Mr. Gordon, at present run the risk of being called upon to remove their railway, by the trustees of the turnpike road, parish road, or street, all of which it crosses on the level. This circumstance as well as the annoyance which the public of Newton sustain from the passage of the railway, must make them wish to see it removed from the public thoroughfares, but I submit it would be unfair to throw on the Railway Company the expense of this removal, and of providing them with an unobjectionable line, and of forming it in the way they propose.

The magistrates from their office, and as representing the freemen of Newton, have the command of much of the property in the neighbourhood of Ayr, and have been allowed by the inhabitants to use the roads in a way which the Railway Company would never be permitted

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Returns relating to
Level Crossings.

No. 4.

Glasgow and Ayr.

to do. They have it, therefore, in their power to divert the line of their railway as contemplated in the agreement, cheaply and easily. But the Railway Company, in addition to the total absence of such influence, have not the power to take a yard of ground beyond their line of railway, as the compulsory authority granted by their Act has expired.

I cannot suppose that the magistrates of Newton will refuse to carry into effect the agreement completed with them in 1837-8 if the Board of Trade call upon them to do so; but if I am mistaken in this, perhaps their Lordships would urge upon them the propriety of passing from the injunction which prevents the Company from enclosing their railway at Peebles Street, and from laying down side-rails. I have no doubt that Sir F. Smith, who is practically acquainted with the working of a great passenger-line, will agree with the Company's engineer, in thinking that gates placed across the Ayr Railway, in place of across Mr. J. T. Gordon's, would be objectionable and attended with danger. I also think he will agree that it is of the greatest consequence in the neighbourhood of a terminus such as Ayr, to have side-rails on which to place trucks or carriages not in use, and on which the engines may move when getting up their steam, in place of using the main rails for that purpose, as they ought to be kept all times free and unencumbered for the passage of traffic.

I have, &c.,

S. Laing, Esq.
&c. &c.

W. JOHNSTONE.

UNDERTAKING by the Glasgow, Paisley, Kilmarnock, and Ayr Railway Company, to the Magistrates of Newton.—1838.

WE, the Glasgow, Paisley, Kilmarnock, and Ayr Railway Company, incorporated by and in virtue of an Act passed in the first year of the reign of Her Majesty Queen Victoria, intituled "An Act for making a Railway from Glasgow to Paisley and Ayr, and from a point on the said Railway near Blairland to Kilmarnock, to be called the 'Glasgow Paisley, Kilmarnock and Ayr Railway,' with Branches," considering that previous to the passing of the said Act, an agreement was entered into between the promoters of the Bill and the magistrates of the burgh of Newton upon Ayr, proceeding on the narrative, that the said magistrates had intimated a desire, at some future period of removing the railway which passes through Peebles Street to the Harbour of Ayr beyond the bounds of the town of Newton, whereby the said railway would cross the Glasgow, Paisley, Kilmarnock, and Ayr railway at a different place from that laid down on the Parliamentary plan and section thereof, and by which agreement the said promoters agreed that we, the Glasgow, Paisley, Kilmarnock, and Ayr Railway Company should be at the expense of forming a tunnel below our line of railway of the height of six feet, and of the width of eight feet, for the purpose of allowing the said magistrates to carry their said railway through the same at any point they might select between the road leading from the Highway to the Salt Pans, and the March of Prestwick or Toll-bar, provided always that levels for such tunnel could be obtained at the point so selected without altering the level of our Parliamentary line; and that the said magistrates required us to form the said tunnel previous to the laying of the rails of our said Parliamentary line, and bind themselves so soon as the same is formed, to remove their present line of railway where it crosses our said Parliamentary line, and to relay the same through the tunnel, to be constructed as above mentioned; and considering that it is now right and proper that the said agreement should be adopted, sanctioned and approved of by the said Company, and sealed with corporate seal thereof; therefore we do hereby not only ratify, approve of, and confirm the said agreement, but bind and oblige the said Company, and the stock and estate thereof, to abide by and implement the same in the whole heads articles and clauses thereof; and we consent to the registration hereof in the books of council and session, or other competent therein to remain for preservation, and that letters of horning, and all other execution necessary may pass on a decree to the interponed hereto in common form, at the instance of any one of the magistrates or of the town clerk for the time being of the said Burgh of Newton, and thereto constitute

our Procurators.

In witness whereof these presents, written on stamped paper, by John Thom, clerk to Andrew and Dugald John Baunatyne, writers in Glasgow, are subscribed by us the said Archibald Smith, John Stewart Wood, and James Campbell, three of the directors of the said Glasgow, Paisley, Kilmarnock and Ayr Railway Company; and sealed with the Corporate Seal of the said Company at Glasgow, this third day of January, one thousand eight hundred and thirty eight years, before these witnesses, James Bruce and Robert Gilmer, clerks to James Watson, accountant in Glasgow.

(Signed) { JAMES BRUCE, witness.
 { ROBERT GILMER, witness.

(Signed)

{ ARCH. SMITH.
 { J. S. WOOD.
 { JAMES CAMPBELL.No. 5.
Garnkirk and
Glasgow.

No. 5.

GARNKIRK AND GLASGOW RAILWAY.

SIR,

Glasgow, 30th September, 1841.

IN compliance with the request in your letter of the 28th current, received this day, the following answers to the questions stated in that letter are respectfully submitted :—

1. Two turnpike roads are crossed on the level by the Garnkirk and Glasgow Railway.
2. Good and sufficient gates are erected across one of these roads at each end of the road, or rather at each side of the railway, in conformity to the Act quoted. The erection of gates at the other road is superseded, in consequence of an arrangement being in progress with the road trustees to carry the road above the railway.
3. Two and sometimes three keepers are presently stationed at the said gates, although one only is required by the Act, and the directions of the Inspector-general of Railways. These extra men are employed in consequence of the public not being accustomed to the interruption, and to prevent, as far as possible, the clamour against the inconvenience, and also to endeavour to obviate the additional risk which many are of opinion is occasioned by these gates.
4. The wages of the gatekeepers vary from 12s. to 18s. per week. They are on duty from 12 to 14 hours daily, including meal times, and excepting Sundays. They have no other employment.
5. The instructions as to shutting the gates are to do so across the road on the approach of trains along the railway. The gates, owing to certain circumstances, are not made to shut the road when open on the railway, and *vice versa*. And when no engines are approaching, the road is open.
6. A copy of the instructions to gatekeepers is herewith sent.
7. The engine-drivers have orders to slow on approaching the public-road crossings; to observe if the signal of a clear way is given by the hoisting of a ball (lighted at night), which signal is in charge of a special person; and if such signal is not given, the engine-man is directed to stop the train.

G. R. Porter, Esq.
&c. &c. &c.

I have, &c.

CHAS. ALEX. KING, Secretary.

(Copy.)

INSTRUCTIONS TO GATEKEEPERS.

The Act of Parliament, 2nd and 3rd of Victoria, chap. 45th, directs, "that wherever a railroad crosses, or shall hereafter cross, any turnpike road, or any highway or statute labour road, for carts or carriages, in Great Britain, the proprietors, or directors of the company of proprietors of the said railway, shall make and maintain good and sufficient gates across each end of such turnpike road, or other roads at each of the said crossings, and shall employ good and proper persons to open and shut such gates, so that the persons, carts, or carriages passing along such turnpike road or highway shall not be exposed to any danger by the passing of any carriages or engines along the said railroad."

The Railway Company, therefore, in obedience to the said Act of Parliament, direct the gatekeepers to attend to the following rules:—

1. When engines or carriages are approaching from east or west along the railway, towards the crossing of the public road, the gatekeeper shall proceed to close the gates across the railway, in time to have them shut before the engine or carriage-train arrives at the crossing; and shall open them so soon as the same has passed, if no other carriage is at hand on the railway.
2. The keeper shall observe on which side carts or carriages, &c. on the road are nearest, and most likely to be at the railway soonest, and shut the gate on that side first, to prevent any risk of the carriage crossing the rails to the other gate. When two keepers are on duty, both the gates will be closed at the same time; but one keeper only for each is requisite in terms of the Act, and of the directions received by the Railway Company from government.
3. Any attempt to interrupt the gatekeepers, or to cross or otherwise trespass on the railway, is punishable by the Act for regulating railways; and the gatekeepers, police, or other servants of the Company, are entitled to apprehend, and commit for trial in the usual way any persons so offending.
4. It may be necessary for the keepers to explain to passengers, when interrupted by the gates, that they are so closed for the public safety in terms of a public Act of Parliament and the express directions of government, and that the Railway Company are bound to obey the law.

If any person wishes further information, they may be referred to the clerk or to the Road Trustees. Mr. _____ is clerk to trustees of the _____ road.

(Signed)

CHAS. ALEX. KING, Secretary.

The foregoing regulations are referred to in a letter to Mr. Porter of this date.

Glasgow, 30th Sept. 1841.

CHAS. ALEX. KING.

No. 6.

NEWCASTLE AND NORTH SHIELDS RAILWAY,

Newcastle and North Shields Railway Office,
Newcastle, 2d Oct. 1841.

SIR,

IN reply to yours of the 28th ult., I beg to hand you the following answers, viz.:—

1. No turnpike; one township and two private occupation roads.

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Level Crossings.

No. 5.

Garnkirk and
Glasgow.

No. 6.
Newcastle and
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Level Crossings.No. 6.
Newcastle and
North Shields.

2. Good and sufficient gates are erected across both ends of each of such crossings, in conformity with the 2nd and 3rd Victoria.

3. Yes.

4. The wages of one 15s., and the other two 14s. per week each. Hours of attendance from seven o'clock in the morning until nine at night during summer, and from eight in the morning to half-past eight at night during winter, being the whole time the trains are running: they have no other employment.

5. Yes.

6. They are each furnished with a red and a white flag for the day time, and lamps for use after dark (the same as our railway police). They are to expose the white flag or bright light when each train passes when all is free, and the red ones should any impediment appear in the way. They have positive instructions never to be absent from their post.

7. To sound the whistle on their approach to each of the crossings, and to attend stoutly to the signals.

In the hope the foregoing returns will be satisfactory to their Lordships,

I have, &c.

G. R. Porter, Esq.
&c. &c. &c.

WM. SWAN, Clerk to the Company.

No. 7.
Dublin and
Kingstown.

No. 7.

DUBLIN AND KINGSTOWN RAILWAY.

QUESTIONS from Railway Department per Mr. Porter's Letter of 28th Sept. 1841, with Answers from the Dublin and Kingstown Railway Company.

1. How many turnpike roads and highways are crossed on a level by the Dublin and Kingstown Railway?—The Dublin and Kingstown Railway does not cross any turnpike road or highway, properly so called, on the level. It does cross five private roads, over some of which there is a considerable amount of intercourse.

2. Are good and sufficient gates erected across each end of such turnpikes or highways at each end of such crossings in conformity with the 2nd and 3rd Victoria, cap. 45?—The Company's Act of Incorporation required such gates to be erected at every public crossing on the level, and such gates have been erected accordingly.

3. Are gatekeepers stationed at each of such crossings in conformity with the said Act?—Yes. There has at times been a gatekeeper day and night at each crossing; and on days when extra trains are running there are always two men.

4. What wages do such gatekeepers receive? How many hours do they remain on duty? Have they any other employment?—The day-men each receive 10s. per week and a house, or 2s. 6d. per week lodging-money, with clothes. The night-men 10s. per week, and a watch-coat. Each man is 12 hours on duty, and has not any other employment.

5. Are positive instructions given to such gatekeepers to keep such gates constantly shut across the roads unless when opened by the gatekeepers to allow carriages, &c. to cross the railway?—This has been the practice on this line since a very short time after it opened, although it is in direct contravention of the Company's Act, which requires precisely the reverse, namely, that the gates should be constantly shut across the railway unless when a train was passing. This was early found to be attended with imminent danger, and the present practice established, although not without a good deal of opposition from the public.

6. What other instructions are given to such gatekeepers?—To hang out a red flag by daylight, or show a red light by night, before opening the gates; and not to open them while an approaching train is in sight.

7. What instructions are given to engine-drivers as to precautions to be observed on approaching crossings?—Their general instructions to keep a good look-out at all times, and never under any circumstances to pass a red signal-flag or light, have been found quite sufficient.

2d October, 1841.

J. F. BERGIN.

No. 8.
Midland Counties.

No. 8.

MIDLAND COUNTIES RAILWAY.

ANSWERS to the Inquiries made by the Lords of the Committee of Privy Council for Trade with reference to Public Roads crossed on the Level.

There are not any turnpike roads crossed on the level, but there are ten public highways crossed on the level, as follows:—

1. Road from Sawby to Breaston;—this is at Sawby passenger station.

2. Road from Long Eaton to Barton Ferry is very little used except for the occupation of land, and is at Long Eaton passenger station.

3. Road in the village of Attenborough.

4. Road from Beeston to Clifton is very little used, and is at Beeston passenger station.

5. Road from Lenton to Wilford Ford, very little used except for occupation.

6. Road from Nottingham to Wilford Ferry is at the entrance to Nottingham station: it is principally used as a bridle road; carriages cannot go to Wilford this way, the ferry being

for horses and foot passengers merely; the above crossings are between Nottingham and Derby.

7. Road from Cossington to Ratcliff is about six miles north of Leicester.

8. Road from Wigston to Blaby, about three miles south of Leicester, is at Wigston passenger station.

9. Road from Counterthorpe to Whetstone, about six miles south of Leicester, and is used partially as a station.

10. The Watling-street-road, near Wilby: this part of the road is very little used, except for driving cattle on, being nearly impassable as a carriage road.

Not any of these roads have large thoroughfares, nor does any coach or public conveyance travel on any of the roads crossing the Midland Counties Railway on the level.

2. Gates and keepers. Gates are placed at each crossing above named, and constructed so as to close the line of railway when opened for the passage of carriages.

3. Houses are built and men placed at each gate, one by day and the other by night, except at Attenborough, where, there being very little passing, the gates are locked at night.

4. The wages of the man is 18s. per week, besides clothing, each man is on duty twelve hours; they have short beats assigned to them, in no case scarcely out of sight of the gates.

5. The gatekeepers have positive orders to keep the gates constantly shut across the road, and to open them when required to allow carriages, &c., to pass the railway.

6. They have positive orders to be at the gates half an hour before any train is due, and to pay particular attention before the opening of them for the passage of carriages, &c., across the line that no train is in sight.

Signal boards are placed at each crossing, which are turned if it be necessary for a train to stop by day, and lamps are fixed on the gates, which show a red signal (to stop), when the gates are thrown across the railway by night.

7. The engine-drivers have orders to pay particular attention to the before-named signals by day and night, so as to stop the train before reaching the gates if a signal be made, and also during the night on their approach to such places, to blow their whistle so as to apprise the gatekeeper of their coming.

THOMAS WOODHINGE,

Engineer, and Superintendent.

Leicester, 2d Oct. 1841.

LETTER sent to the Midland Counties Railway Company, in reply to their Letter of the 4th Oct., relative to Gatekeepers at night, &c.

SIR,

Board of Trade, October 7, 1841.

WITH reference to your letter of the 4th October, enclosing answers to the circular of the Lords, &c., relative to level crossings, I am directed, &c., to inform you that, as it is clearly illegal to close a highway against the public, by locking gates across it all night, and stationing no person to open them, their Lordships are of opinion that the provisions of the 2 and 3 Victoria, c. 45, must be complied with, by stationing a person to open and shut the gates at the Attenborough crossing, by night as well as by day; and they request to be informed whether the directors will undertake to comply with this requisition.

Their Lordships further direct me to observe, that the practice of assigning beats to the gatekeepers appears open to danger, especially if they are ever out of sight of the gates; and they recommend to the attention of the directors the following regulation which is adopted by some other railways:—"That if on any account the gatekeeper has to leave the gates, if only for one minute, he shall without fail, before quitting his post, close both gates across the public high-road.

To the Secretary of the Midland Counties
Railway Company.

I am, &c.

S. LAING.

SIR,

Leicester, 11th October, 1841.

IN reply to yours of the 7th, which I have been prevented answering by being absent from home, I fear my former reply was not sufficiently explicit.

At Attenborough crossing (a very small village) *there is a station house and a person living in it who can be called up at any moment to allow a carriage to pass across the railway, the gates being locked across the highway.*

With reference to the gatekeepers having beats assigned them, I will lay your remarks before our directors to-morrow.

I have, &c.

S. Laing, Esq.
&c. &c.

J. S. BELL, Secretary.

No. 9.

KENYON AND LEIGH JUNCTION RAILWAY.

SIR,

Bolton, 4th October, 1841.

IN reply to your circular of the 28th ultimo, I beg to state:—

1. That this line crosses one turnpike road and one highway upon the level.

2. Good and sufficient gates have been erected across both on each side of the railway at such crossings.

Appendix.

IV.

Returns relating to
Level Crossings.

No. 8.

Midland Counties.

No. 9.

Kenyon and Leigh
Junction.

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IV.
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No. 9.
Kenyon and Leigh
Junction.

3. Gatekeepers are stationed at each of the said crossings.
The line is under lease to the Bolton and Leigh Railway Company, who have in turn leased it along with their own line to Mr. John Hargreaves, jun.
For replies to the other queries contained in your circular, I beg to refer to the accompanying return in regard to the Bolton and Leigh Railway.

G. R. Porter, Esq.
&c. &c.

I have, &c.

PETER SINCLAIR, Treasurer.

No. 10.
Bolton and Leigh.

No. 10.

BOLTON AND LEIGH RAILWAY.

SIR,

Bolton, 4th October, 1841.

IN reply to your circular of the 28th ult., I beg to make the following return:—

1. This railway crosses two turnpike roads and six highways, on the level. In entering the town of Bolton, the line (which is a single one throughout) diverges into two branches, one leading to the general depôt for merchandize, the other to the passenger station and to coal staiths, both branches also communicating with important establishments for the construction of locomotive and other engines, cotton factories, &c. Several of the streets in the town are crossed by these branches on the level; and in one instance the line passes along a street throughout its whole length. Horse-power only is used through the town, with the exception of one street, which is crossed by a locomotive engine four or five times daily, but at a comparatively slow speed, being very near the station.

2. Good and sufficient gates have been put up on each side of the railway upon all the turnpike roads and highways crossed on a level, as above mentioned, but not upon the streets in Bolton.

3. Gatekeepers are stationed at each of the said gates; a man is also stationed at the street before mentioned as being occasionally crossed by a locomotive engine, there being a gate across the railway on each side of the said street.

4. Some of the gatekeepers receive 10*s.* per week; one of them 12*s.*; in other cases the amount of remuneration has not yet been settled, an increased allowance having become necessary in consequence of the gatekeepers having been required, since the recent accidents, to give additional attendance. Most of the persons appointed to attend to the gates reside in cottages built for the purpose adjoining the gates; and additional cottages are now erecting for the same purpose at other crossings. They are required to attend to the gates from the time of the first train passing in the morning, at about six o'clock, until the last train has passed at night, about eight. One engine, with luggage only, passes over five miles of the road at about four o'clock A.M.; but the gatekeepers are not required to give attendance to this engine. The gatekeepers are not allowed to attend to any other employment.

5. Positive instructions have been given to all the gatekeepers to keep the gates shut across the roads, opening them only to allow carts, &c., to cross the railway, and immediately closing them again. In the case of one turnpike road it was found that the attempt to shut the gates on the passage of every vehicle very greatly impeded the traffic upon the turnpike road; and in this case the man has been instructed to do all that can be done to secure the safety both of the railway and the road, without unduly or unnecessarily impeding the traffic upon either.

6. No other instructions are given to the gatekeepers, beyond a general charge to do all in their power to secure the safety of the railway and of the roads crossed, under any circumstances which may occur.

7. The engine-drivers have been instructed to sound their steam-whistle on approaching each crossing, and when at least 300 yards distant, so as to call the attention of the gatekeepers to the approach of the train.

I have, &c.

G. R. Porter, Esq.
&c. &c.

PETER SINCLAIR.

The answers to Nos. 4, 5, 6 and 7, apply also to the Kenyon and Leigh Junction Railway.

LETTER sent to the Bolton and Leigh Railway, in reply to their Letter of the 4th October, relating to Level Crossings.

SIR,

Board of Trade, 8th October, 1841.

WITH reference to your answers to the circular of the 28th inst., &c., I am directed, &c., to observe that, in the case of the street which is stated in your letter to be occasionally crossed by a locomotive engine at a comparatively slow speed, strict orders to limit the speed to a very slow rate appear desirable. In the case of the turnpike road their Lordships observe that, unless the manager of the Company is perfectly satisfied that no additional risk is incurred by not keeping the gates shut across the road, it ought to be done, notwithstanding any inconvenience that may be occasioned. Their Lordships would suggest that, if the present practice

is continued, it would be a proper precaution to oblige engine-drivers to reduce their speed, as well as to sound the whistle, on approaching this turnpike road; and to issue a positive order to the gatekeeper to shut the gates across the road the moment he hears the whistle or sees an engine approaching; and also if, from any circumstances whatever, he is obliged to absent himself, though for a single instant, from his post. In the case of the night-train, also, orders should be issued to approach the crossings with great caution.

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Returns relating to
Level Crossings.

No. 11.

BRANDLING JUNCTION RAILWAY.

No. 11.
Brandling
Junction.

Gateshead, 2nd October, 1841.

1. How many turnpike roads and highways are crossed on a level by the Brandling Junction Railway?—One turnpike and six highways.
2. Are good and sufficient gates erected across each end of such turnpikes or highways at each of such crossings in conformity with the 2nd and 3rd Victoria, cap. 45?—Two with gates, and five without gates: very little traffic on the highways which are crossed.
3. Are gatekeepers stationed at each of such crossings in conformity with the said Act?—Five have gatekeepers or watchmen stationed at them, the rest are little more than occupation roads, with scarcely any traffic on them.
4. What wages do such gatekeepers receive?—From 8s. to 12s. per week.
How many hours do they remain on duty?—Thirteen hours per day.
Have they any other employment?—Have no other employment.
5. Are positive instructions given to such gatekeepers to keep such gates constantly shut across the roads, unless when opened by the gatekeepers to allow carriages, &c., to cross the road?—Where gates are placed, such instructions are given.
6. What other instructions are given to such gatekeepers?—Instructions are given to watchmen not to allow any carriage, horse, or person on foot to cross the line when the trains are approaching.
7. What instructions are given to engine-drivers as to precautions to be observed on approaching crossings?—Instructions are given to the engine-men to keep a good look out, and to sound the whistle in approaching any crossing.

I have, &c.

JOHN REWCASTLE,
Clerk to the Company.

LETTER sent to the Brandling Junction Railway Company, in reply to their Letter of the 2nd October, relative to Level Crossings.

SIR,

Board of Trade, 7th October, 1841.

WITH reference to your letter, of the 2nd October, I am directed, &c., to inform you that as the terms of the Act 2 and 3 Victoria, cap. 45, are imperative that gates shall be erected at all level crossings of highways across each end of the road, and proper persons stationed to open and shut such gates, their Lordships must insist on a compliance with them on the part of the Company, and they request to be informed whether the directors will undertake that gates shall be erected forthwith, at the five crossings mentioned in the Return, and gatekeepers stationed at each crossing during the continuance of the traffic upon the railway in conformity with the Act.

I am, &c.

S. LAING.

To the Secretary of the
Brandling Junction Railway Company.

SIR,

Gateshead, 13th October, 1841.

YOUR letter of the 7th instant relative to the erection of gates at level crossings, and the appointment of proper persons to attend to open and shut them during the continuance of the traffic upon this railway, was laid before the directors at their meeting yesterday, and I am instructed to forward you, for the information of the Lords of the Committee of Privy Council for Trade, the under-mentioned resolution of the Directors on the subject, viz:—

“That the engineer be directed to take steps forthwith for the erection of gates where the railway crosses highways on a level, and that proper persons be appointed to open and shut them, in conformity with the Act 2 and 3 Victoria, cap. 45.”

I have, &c.

JOHN REWCASTLE.

S. Laing, Esq.,
&c. &c.

No. 12.

TAFF VALE RAILWAY.

No. 12.
Taff Vale.

SIR,

Cardiff, Oct. 4, 1841.

I HAVE the honour to acknowledge your letter of the 28th ultimo, and to hand you the following replies to your queries:—

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Returns relating to
Level Crossings.

No. 12.
Taff Vale.

1. No turnpike road is crossed on a level by the Taff Vale Railway, one parish road and level crossings by the railway.
2. Good and sufficient gates are erected across each end of such roads.
3. Gatekeepers are stationed at each of such crossings.
4. Gatekeepers' wages are 18s. per week, they remain on duty thirteen hours, and have no other employment.
5. Instructions are given to such gatekeepers to keep such gates constantly shut, unless when opened to allow a passage across the railway.
6. The gatekeepers are instructed to hoist a signal for stopping the train before opening the gates, and to keep the flag flying until the gates are shut.
7. Instructions are given to the engine-drivers to look out carefully and to attend to the signal given by the gatekeepers.

G. R. Porter, Esq.
&c. &c.

I have, &c.

JOSEPH BALL, Secretary.

No. 13.

No. 13.
Lancaster and
Preston.

LANCASTER AND PRESTON RAILWAY.

4th Oct. 1841.

1. How many turnpike roads, and highways are crossed on a level by the Lancaster and Preston Junction Railway?—No turnpike roads, but one highway.
2. Are good and sufficient gates erected across each end of such turnpikes or highways, at each of such crossings, in conformity with the 2nd and 3rd Victoria, cap. 45?—Yes.
3. Are gatekeepers stationed at each of such crossings in conformity with the said Act?—Yes.
4. What wages do such gatekeepers receive? How many hours do they remain on duty? Have they any other employment?—Eighteen shillings per week. From six in the morning until eight at night, or such further time as is requisite until the last train has passed, and he lives and sleeps on the spot it is a road-side station, and he acts as station-keeper.
5. Are positive instructions given to such gatekeepers to keep such gates constantly shut across the roads unless when opened by the gatekeeper to allow carriages, &c, to cross the railway?—Yes.
6. What other instructions are given to such gatekeepers?—None in particular, except the rules and regulations of the Company, and general instructions as to being always on the look-out, and attentive to his duties as gatekeeper.
7. What instructions are given to engine-drivers as to precautions to be observed on approaching crossings?—The rules and regulations of the Company, and to keep a good look out.

I have, &c.

S. EDW. BOLDEN, Secretary.

No. 14.

No. 14.
Great North of
England.

GREAT NORTH OF ENGLAND RAILWAY.

SIR,

Darlington, 5th October, 1841.

I HAVE the honour to acknowledge the receipt of your letter of the 28th ult., and to acquaint you that the public roads crossed on a level by this railway are—

The highway from Beninbrough to Skelton ;
The highway from Darlington to Yarm ; and
The turnpike from Darlington to Hurworth.

I enclose separate returns for each road, with copies of special instructions in the two latter cases.

I beg to add, in explanation, that the Hurworth road is never crossed by passenger-trains in consequence of its being to the north of the Darlington station. We do not consider it necessary that the gates should be *invariably* shut ; but great attention is paid to enforcing a slow rate of speed, so that should there be even a chance of an accident, the engine may be stopped instantly ; and the crossing being close to the station, where all trains stop as a matter of course, the rule is carried into practice without difficulty.

With regard to the Yarm road, it is only crossed by coal-trains and merchandize-trains: it is the point where the coal-waggons from the Stockton and Darlington Railway are received and delivered. On this account the trains necessarily stop close to this point ; and as the tickets are taken by the gatekeeper, it insures regular attendance when most requisite.

G. R. Porter, Esq.,
&c, &c.-

I have, &c.

W. O'BRIEN, Secretary.

Appendix.

IV.

Returns relating to
Level Crossings.No. 14.
Great North of
England.

HIGHWAY from Beninbrough to Skelton.

2. Good and sufficient gates are erected at each end of the crossing.
3. A gatekeeper is stationed there.
4. The gatekeeper's wages are 10s. per week. He remains on duty from six in the morning until nine in the evening, and has no other employment.
5. Positive instructions are given to the gatekeeper to keep the gates constantly shut across the roads, unless when opened by him to allow carriages, &c. to cross the railway.
6. No other instructions are given to him.
7. The engine-men are instructed to keep a good look-out, as on all other occasions, and to give notice with the whistle of their approach.

W. O'BRIEN Secretary.

N.B. This road is in fact a lane which is hardly ever used, and is close to a station at which all the trains stop.

HIGHWAY from Darlington to Yarm.

2. Good and sufficient gates are erected.
3. A gatekeeper is stationed there.
4. His wages are 21s. per week. His hours from six in the morning till six at night, or later if the last coal-train has not arrived.
- 5 and 6. He receives the tickets for the loaded coal-waggon, and directs them to be sorted to their proper sidings. His instructions are annexed. (A.)
7. Engine-drivers are forbidden, under a penalty of immediate dismissal, ever to cross this road at a greater speed than two miles an hour under any circumstances.

W. O'BRIEN, Secretary

N.B. Passenger-trains never cross this road.

TURNPIKE Road from Darlington to Hurworth.

2. Good and sufficient gates are erected.
3. A gatekeeper is stationed there.
4. His wages are 14s. per week. Hours from six in the morning till eight at night, and he is relieved at meal times by another policeman. He has no other employment.
5. His instructions are annexed. (B.)
6. He has no other instructions.
7. Engine-drivers are forbidden, under penalty of immediate dismissal, ever to cross this road at a greater speed than two miles an hour under any circumstances.

W. O'BRIEN, Secretary.

N.B. Passenger-trains never cross this road.

(A.)

INSTRUCTIONS for Mr. Robinson at Haughton Lane.

Darlington, 3d July, 1841.

Mr. Robinson will attend at Haughton Lane to keep the road clear for passengers. No engine is allowed to cross at a greater speed than two miles an hour; and Mr. Robinson will immediately report any engine breaking this rule.

He will pay particular attention that no waggons are left on the sidings, so near to the main way as to run any risk of touching the broad merchandize-waggon. He will constantly watch the points, and take care that they are not left fastened, so as to interfere with the engines running on the main way.

He will afford Mr. Tully every assistance in receiving the tickets, sorting the waggons, and generally in whatever way Mr. Tully may desire.

W. O'BRIEN, Superintendent.

(B.)

ORDERS to the Policeman at the Gates at the Bank Top.

Darlington, 23d June, 1841.

The policeman's duty is to be constantly on the ground, to prevent people trespassing on the railway, and to keep the way clear for the engines.

No engine is allowed to pass the road, under any pretence whatsoever, light or loaded, at a greater speed than *two miles an hour*.

Appendix.

IV.

Returns relating to
Level Crossings.No. 14.
Great North of
England.

The policeman has authority to stop any engine that may appear to him to be going too fast ; and the engine-men are hereby directed to obey any such order.

Should any engine, notwithstanding, cross at a greater rate than is allowed, the policeman must immediately report it to the inspector, under penalty of immediate dismissal.

Should it appear that an engine has crossed the road at a quicker rate than is allowed, or should any accident occur, whether from the fault of the person himself or from that of one of the servants of the Company, the policeman will be held answerable, unless he can show to the satisfaction of the superintendent that he used every exertion to stop the engine or to prevent the accident.

W. O'BRIEN, Superintendent.

SIR,

Board of Trade, 9th October, 1841.

WITH reference, &c., to your letter of the 5th October, I am directed, &c., to refer to the accident which recently occurred at the Bridgewater terminus of the Bristol and Exeter Railway, as showing the necessity of the greatest vigilance in order to prevent collisions between engines passing backwards and forwards between the passenger-station and the engine-shed, and coaches, carts, &c. crossing the line by the Hurworth turnpike road.

I am, &c.

S. LAING.

To the Secretary of the
Great North of England Railway Company.

No. 15.

No. 15.
Northern and
Eastern.

NORTHERN AND EASTERN RAILWAY.

SIR,

Office, High Street, Shoreditch, 5th October, 1841.

I HAVE had the honour to receive your letter of the 28th ultimo, and beg to annex the following answers to your various questions:—

1. There is no turnpike road crossed on the level by this railway, but there are nine public highways so crossed by it, between Stratford and Harlow.

2. Good and sufficient gates are erected across each end of such highways, at each of such crossings, in conformity with the 2nd and 3rd Vic., cap. 45.

3. Gatekeepers are stationed at each of such crossings, in conformity with the said Act.

4. The amount of wages each gatekeeper receives is 18s. per week, with a cottage to live in; they have no other employment, and are always on duty; but the trains on this railway are running only between eight o'clock, A.M., and a quarter past nine, P.M.

5. The gates are always kept shut *across the railway*, except when the trains are passing through, in strict conformity with the Act incorporating this Company, 6 and 7 Will. IV. cap. 103, sect. 112.

6 and 7. The orders to engine-men and gatekeepers are to keep a good look-out generally, and are framed with a view to meet any circumstances that may arise; and I have the honour to enclose herein, for their Lordships' further information, a printed copy of the regulations issued to engine-drivers and gatekeepers, and to the Company's other servants.

I have, &c.

W. BOURNE, Secretary.

G. R. Porter, Esq.,
&c. &c.

LETTER sent to the Northern and Eastern Railway Company in reply to their Letter of the 5th October, relative to Level Crossings.

SIR,

Board of Trade, 9th October, 1841.

WITH reference, &c. to your letter of the 5th October, I am directed, &c., to inform you that their Lordships consider that the provisions of the General Act, 2nd and 3rd Vic. cap. 45, supersede those of Local Railway Acts, and that the Directors will be quite justified in keeping the gates at level crossings shut *across the road* instead of *across the railway*, if they think the former practice, as is generally considered, preferable for the public safety.

I am, &c.

S. LAING.

To the Secretary of the
Northern and Eastern Railway Company.

No. 16.

No. 16.
Liverpool and
Manchester.

LIVERPOOL AND MANCHESTER RAILWAY.

SIR,

Lime Street Station, 6th October 1841.

I HAVE submitted to the Directors the favour of your communication of the 28th ultimo, and am instructed to transmit the following answers to the several queries therein contained:—

1. There are two turnpike roads and sixteen public roads crossed on the level.

2. There are sufficient gates erected across the said roads on each side the railway.

3. Gatekeepers are stationed thereat as enjoined by Act of Parliament.

4. The general wages are 20s. a-week. The day gatemen's hours are fifteen, the night watchmen's nine. They have occasionally to make signals with their flags or lamps; and where passengers are taken up or set down, they attend to the passengers in conjunction with the train guards; and at some of the stopping places (especially at Rainhill and St. Helen's junction, at each of which place an extra man is kept), goods-waggons, when required, are left or taken on.

5. Subjoined are the orders to gatemen as to closing their gates.—At Wavertree Lane, Broad Green, and Patricroft, the passing along the public high road is occasionally so continuous that a special order seemed to the Directors desirable for those gates.

Copy of General Orders to Gatekeepers.

The gatekeepers shall keep the gates across the public high roads *constantly closed*, except when they must necessarily be opened to permit carriages or cattle to pass across the railway. The gatekeepers must be constantly on the look-out, in order to afford complete security both to the railway and to the public high road; and at all times before opening the gates the gatekeeper shall ascertain that no engine is approaching on either side, and in the event of any engine approaching he shall keep the gates closed till the engine has passed.

Copy of Special Orders to the Gatekeepers at Wavertree Lane, Broad Green, and Patricroft.

On the approach of any locomotive engine, the gatekeeper shall ascertain whether any cart or carriage, or any cattle or sheep, are on the high road approaching the railway, and if so, shall immediately close the gate or gates till the engine or train has passed; and if it be foggy weather, or dark, or dusk, the gatekeeper shall close both gates across the public high road the moment he is aware that an engine is approaching. And the gatekeeper shall close and keep close the gates across the public road, in all cases, and at all times when the public safety will be in any degree promoted by the gates being closed or kept closed; and especially if on any account the gatekeeper has to leave the gates, if only for one minute, he shall without fail, before quitting his post, close both gates across the public high road.

6. Copy of Orders to Gatemen and Policemen.

That all gatemen and policemen shall be constantly on the look-out, and shall open the proper gate when an engine has to pass through.

That all gatemen and policemen shall render every assistance in their power in case of accidents, or in foggy weather.

That all gatemen shall communicate to the engine-men passing through the gates, verbally, or by signs, if caution is required from the engine-man as he proceeds.

That every gateman shall light his gate-lamp at dusk, and shall have his hand-lamp constantly trimmed and burning, and ready to give such signals as may be required.

That if a coming engine or train be required to stop to take up passengers, a blue light must be shown in the gate-lamp, and if the coming engine or train be not required to stop, the common white light shall be shown.

That if a train approaches when a previous train has passed through only a few minutes before, the gateman shall signify this circumstance to the engine-man by the waving of his hand-lamp *to and fro sideways*, which means that caution is required; on which signal all engine-men are required to go slowly and keep a good look out.

But if a gateman, owing to an accident or for any other extraordinary cause, wishes to stop an engine which is approaching, he must not only show his red-light, but waive his hand-lamp conspicuously *up and down*, up to the height of his head and then down to the ground, till the engine comes up, and all engine-men are required to stop on this signal being given. And a gateman will be right in making this signal to an approaching engine, if a previous engine has passed through his gate only three or four minutes before.

All policemen and gatemen are required, when a luggage-train approaches their several stations, and before she comes up, to go on the line and inspect both sides of the train, to ascertain whether any of the loading (particularly bags of cotton) have slipped so as to *overhang* the waggon more than when first loaded; and if such be the case, to make immediate signal for the *train to stop*, in order that the loading may be put right and fastened on again before the train proceeds.

7. Copy of Order to Engine-men.

Before any train, whether with luggage or coaches, cross a high road on the level, the engine-man shall blow his whistle when 200 yards distant, so as to give sufficient notice of his approach.

Should any further information be required the Directors will be happy to afford it, and
I have, &c.

HY. BOOTH.

G. R. Porter, Esq.,
&c. &c.

No. 17.

SLAMANNAN RAILWAY.

SIR,

Glasgow, 5th October, 1841.

I BEG leave to make the following returns in reply to your letter of the 28th ultimo, addressed to me as secretary of this Railway Company, viz. :—

Appendix.

IV.

Returns relating to
Level Crossings.

No. 16.

Liverpool and
Manchester.

No. 17.

Slamannan.

Appendix.
IV.
Returns relative to
Level Workings.

No. 17.
Slamannan.

1. There are no turnpike roads crossed on a level by this railway, but there are five public roads or highways which cross the surface.
2. Across one of those highways gates are erected; across other two posts are erected, at which ropes are attached, to stretch across as occasion requires; at the other two no gates have as yet been erected, but they are made, and about to be put up immediately.
3. At the roads where the ropes are used, the station keeper attends to one, and the other is attended by a policeman at the time of the trains passing.
4. The station keeper receives 10s., and the policeman 14s. per week, and attend to the crossings at the time of the trains passing. Their other duties are to give out tickets, and to perambulate the railway respectively.
5. They have no particular instructions.
6. Further than to see that nothing is about to cross the railway when the trains are passing.
7. The engine-drivers are directed to sound their whistles when approaching a surface-crossing.

G. R. Porter, Esq.,
&c. &c.

I have, &c.

JAMES MITCHELL, Secretary.

LETTER sent to J. MITCHELL, Esq., in reply to Letters from the Monkland and Kirkintilloch, the Ballochney, and Slamannan Railway Companies of the 5th October.

SIR,

Board of Trade, 9th October, 1841.

WITH reference to your letters of the 5th October, transmitting returns from the Monkland and Kirkintilloch, Ballochney, and Slamannan Railway Companies, to their Lordships' circular relative to level crossings, I am directed, &c., to inform you that their Lordships do not consider it necessary to interfere with the existing arrangements upon the two former lines, under the circumstances stated by you, and as long as the speed of locomotive engines is confined to five miles an hour. With reference to the Slamannan Railway, their Lordships wish to know at what speed trains travel.

J. Mitchell, Esq.

I am, &c,

S. LAING.

No. 18.
Ballochney.

No. 18.

BALLOCHNEY RAILWAY.

SIR,

Glasgow, 5th October, 1841.

IN reference to your circular under date the 28th ultimo, addressed to me as secretary for this Railway Company, I have to submit the following returns, viz.:—

1. There are two highways crossed by that portion of the railway traversed by locomotive engines on the level; but both of these roads are very little used. There is not, it is believed, one cart per day, on an average, crossing the railway at these points. Upon the other parts and branches of this railway there are three turnpike roads and two highways crossed on the level by horse-hauled waggons, at the rate of from two to two and a half miles per hour. Upon the highways there is very little traffic, a cart being rarely seen passing along them.

2. Across the turnpike roads and the highways, where the train is dragged by locomotive engines, gates are in course of being erected; but upon the other roads referred to, no preparation for their erection has yet been made by the superintendent, who considers that at those points there is no necessity for erecting gates, seeing that the traffic, not only upon the roads but along the railway, is so very small; while the little trade that *does* pass, travels at so low a speed, by horses, that it is impossible any accident can happen. Twelve years' operation of the railway, during which no accident has occurred at the points of crossing, proves that the crossings are quite safe. Besides, the amount of traffic on those branches would not justify the expense of erecting and maintaining gates; and the rate of speed is less than that on ordinary roads which often intersect each other.

3. There are men stationed at certain of the crossings, and when the gates are completed it is intended to place a man permanently at each.

4. From 12s. to 14s. per week is allowed to each person; they are employed from 10 to 12 hours, and they have no other duty to perform.

5 and 6. The persons stationed at the crossings have instructions to attend to the safe passage of the trade at these points. When the gates are completed, they will of course receive positive instructions to keep them constantly shut, &c.

7. One engine only travels at the rate of five miles an hour; and, this being the case, any particular caution to the engineer is not considered necessary. They have, however, peremptory instructions to blow the whistle when approaching the crossing at present.

These arrangements have hitherto prevented accidents; but in case my Lords are not satisfied with them, I humbly request that, before any alteration be made, an inspection of the localities be made by one of the officers of the department.

G. R. Porter, Esq.,
&c. &c.

I have, &c.

JAMES MITCHELL.

No. 19.

MONKLAND AND KIRKINTILLOCH RAILWAY.

SIR,

Glasgow, 5th October, 1841.

IN answer to the queries contained in your letter of the 28th ultimo, addressed to me as secretary of this Company, I beg to mention—

1. That this railway crosses one turnpike road and nine parish roads on a level.
 2. Good and sufficient gates are erected at four of these parish roads, and gates are erecting at a fifth. These gates are put across the parish roads where the principal traffic is upon the parish road; and plans are in hand for passing other two parish roads by bridges, the one above, the other under the parish road. At the turnpike road one special officer is stationed by this Company, and another by the road trustees, whose duty it is to regulate the approach of the engines, and to see that all is clear and safe on the turnpike before the engine is allowed to cross. This arrangement has appeared to both parties to be the most suitable and safe, from the level and position of the turnpike road. The arrangement has been so successful that no accident has happened during the course of the 15 years the crossing has been in operation. And in case my Lords are not satisfied with this arrangement, I humbly submit that the road trustees be heard, and an inspection of the locality be made by one of the officers of the department before any order is issued, as under the 2d and 3d Vict. cap. 45, with the terms of which the Company are quite ready to comply, so far as *they* are concerned.

3 and 4. The gatekeepers receive 10s. per week and a free house. They have no other duty to perform but to attend to the gates and prevent trespasses. Their hours vary on different parts of the line, as the trade may be, but generally from 12 to 14 hours per day.

5. Positive instructions are given to each gatekeeper to keep the gates shut across the parish road, and never to be opened but by the gatekeeper to allow carriages to pass across the railway; and the gates are so constructed and placed that when the parish road is open the railway is shut, and *vice versa*.

6. The instructions given to the gatekeepers are, that they shall ascertain before opening any gate that no engine is approaching so near the crossing as to cause any danger; and that if any engine be within one quarter of a mile of any such crossing, the gates are not to be opened until such engine has passed.

7. The instructions to engine-drivers are, that every engine-driver, on approaching the crossing of any parish road, or highway, or turnpike road, and when at one quarter of a mile's distance from the same, to sound his whistle, and continue to sound until the road so crossed is passed; and that on approaching any gate, if the gate is shut across the railway, the engine-driver is not to approach within 100 yards of the gate until the railway has been opened and the parish road properly secured.

I beg leave to remark that the two other parish roads crossed by this railway, not accounted for above, although under the parish trust, are all but unused, from the formation of other roads: on some of them there does not pass 50 carts during the year; and on the others, one milk-cart morning and evening is all that crosses the railway. Correctly speaking, they are no more than farm roads, although under the parish trust; and the farmers and trustees particularly request that the Railway Company would not erect gates at these crossings.

I beg also to observe that, however urgently gates, &c. may be called for, and ought to be erected on swift passage or luggage lines, there does not exist that necessity on the Monkland and Kirkintilloch Railway, where the speed is regulated not to exceed five miles per hour.

I have, &c.

G. R. Porter, Esq.,
&c. &c.

JAMES MITCHELL, Secretary.

Appendix.

IV.

Returns relating to
Level Crossings.No. 19.
Monkland and
Kirkintilloch.

No. 20.

HULL AND SELBY RAILWAY.

No. 20.
Hull and Selby.

RETURN to the questions as to roads, &c., contained in the letter dated the 28th of September, 1841, addressed from the Railway Department of the Board of Trade, to the Secretary of the Hull and Selby Railway.

1. No turnpike road is crossed by the Hull and Selby railway on the level.

Thirteen township highways are crossed by it on the level, of these one only, viz., (the road from Howden to Bubwith), is a stage-coach road, and it has become such only since the opening of the railway.

2. At ten out of the above number of thirteen highways, good and sufficient gates are erected, which, pursuant to a provision in the Hull and Selby Railway Act (6 Wm. IV. cap. 80, sec. 70), are so constructed as to shut across the highway when trains are passing on the railway, and to shut across the railway; at all other times leaving the highway open. At the three other of the above highways (which are very little used for any other purposes than those of agriculture), good and sufficient gates are erected across each end of such highways, at each of such crossings, in conformity with the 2d and 3rd Vic. c. 45. The Directors of this railway consider the position of the gates as required by the General Act (2 and 3 Vic. c. 45,) the preferable one for the safety of passengers, with reference to the traffic on the railway as well as that on the highway, but it being a matter of doubt whether a compliance with the require-

Appendix.
IV.
Returns relating to
Level Crossings.

No. 20.
Hull and Selby.

ments of the General Act of 2 and 3 Vic. c. 45, can relieve this Company from the penalties imposed by their Local Act, (4 Wm. IV. c. 80, § 70,) for non-compliance with its provisions, they have therefore continued the gates erected in conformity with their Local Act at the ten most frequent crossings.

The following is a copy of the 70th clause of the Hull and Selby Railway Act.

"And be it further enacted, that in all cases in which the said railway shall cross any public highway on a level, the said Company shall erect and at all times maintain a good and sufficient gate on each side of such public highway, where the said railway shall communicate therewith, all which gates shall be constantly kept shut by some person to be appointed by the said Company, (and which person the said Company are hereby required to appoint,) except during the times when carriages passing along the said railway shall have to cross such public highway, and then the same shall be opened for the purpose only of letting such carriages pass through; and the person entrusted with the care of such gate shall cause every such gate to be shut as soon as such carriages shall have passed through the same, under the penalty of forty shillings for every default therein."

Between the Company's depôt at the Hull terminus, and the quay of the Humber Dock, there is a public highway (not included in the above number of thirteen), now called Railway-street, across which rails are laid on the level for the convenience of allowing goods for shipment to be brought from the depôt upon the railway-waggons close to the ship's side. No locomotive engine is ever brought across or upon this street. The engines stop at the depôt, and the waggons are moved upon the rails from thence to the dock quay by men or a horse. No gates are erected across this street as they would be a great public inconvenience in that situation, and the danger does not exist there against which gates are intended to be a protection.

3. At ten of the above-mentioned crossings two gatekeepers are stationed at each, who relieve each other, and keep watch day and night. At each of the three other crossings (which are little frequented), one gatekeeper for each is stationed in conformity with the said Acts.

4. The gatekeepers receive wages of 16s. a-week; each of them remains on duty twelve hours.

At five of the above-mentioned crossings the gatekeepers are sworn in as railway policemen, and attend to the duties of policemen at the stations erected at the said five crossings.

5. At the three crossings where, as above mentioned, gates have been erected in conformity with the provisions of the Act 2 and 3 Vic. c. 45, the gatekeepers have positive instructions given them to keep such gates constantly shut across the highways, unless when opened by them to allow carriages, &c. to cross the railway; at the ten other crossings, where, as above mentioned, gates are continued in conformity with the provisions of the Local Act, the gatekeepers have positive instructions to keep the gates constantly shut across the railway so as to leave the highway open, unless when the gates are opened by them to allow trains to pass along the railway.

6. The gatekeepers have instructions given them to be constantly on the look-out for the approach of trains, and to close the gates across the highways when the train is a mile off, and to close the gates across the railway when the train has passed. They are also instructed to light the signal-lamps on the hinge-post of their gates at dusk, and to place it so that the *white* signal shall be exhibited to an approaching train when the gates are closed across the highway, and the *red* signal exhibited when the gates are closed across the railway.

7. The engine-drivers have instructions to keep a good look-out on approaching crossings, and if the gates are not opened for them, they are instructed to shut the steam off, and stop before coming to the gates.

LETTER sent to the Hull and Selby Railway Company, in reply to their Letter of the 6th October, relative to Level Crossings.

SIR,

Board of Trade, 9th October, 1841.

WITH reference, &c., to your letter of the 6th October, I am directed, &c., to inform you that they are of opinion that the provisions of the General Act 2 and 3 Vict. c. 45, supersede those of Local Railway Acts, and that the Directors will be perfectly justified in keeping the gates shut in the manner which they consider preferable for the public safety.

I am, &c.

S. LAING.

To the Secretary of the
Hull and Selby Railway Company.

No. 21.
Clarence.

No. 21.

CLARENCE RAILWAY.

1. How many turnpike-roads and highways are crossed on a level by the Clarence Railway?—Five turnpike and eleven highway-roads.

2. Are good and sufficient gates erected across each end of such turnpikes or highways at each of such crossings, in conformity with the 2 and 3 Vic., c. 45?—Yes.

3. Are gatekeepers stationed at each of such crossings, in conformity with the said Act?—Yes.

4. What wages do such gatekeepers receive? how many hours do they remain on duty? have they any other employment?—Ten shillings per week; hours of attendance from 6 A.M. to 8 P.M.; no other employment.

5. Are positive instructions given to such gatekeepers to keep such gates constantly shut across the roads, unless when opened by the gatekeeper to allow carriages, &c., to cross the railway?—Yes.

6. What other instructions are given to such gatekeepers?—To be very vigilant and attentive to the gates, and instant dismissal would be the result of any neglect.

7. What instructions are given to engine-drivers as to precautions to be observed on approaching crossings?—To slack their speed in taking the crossings, and a fine of 2s. 6d. for each offence in not doing so. Also to ring their bell before approaching any road crossed by the railway, under a fine of 5s.

Appendix.

IV.

Returns relating to
Level Crossings.No. 21.
Clarence.

No. 22.

WISHAW AND COLTNESS RAILWAY.

SIR,

Glasgow, October 6, 1841.

I BEG leave to state, in answer to your circular of the 28th ultimo,—

1. That the Wishaw and Coltness Railway crosses all turnpikes and highways, either above or below, by means of bridges, with the exception of a parish road, which is crossed upon the level.

2. Gate-pillars have been erected, and gates made to shut across the railway at the above highway; but they are now being altered to shut across the highway.

3. There is a person appointed to the road as gatekeeper.

4. The wages of such gatekeeper are 14s. per week, with a free house, and he remains on duty from 6 o'clock A.M. to 6 o'clock P.M.

5. When the gates are erected, positive instructions will be given to the gatekeeper to keep such gates constantly shut across the highway, unless when opened by the gatekeeper to allow carriages, &c., to cross the railway, as one half of the trade is carried on by horse-power, and the other by locomotive engines going at the rate of six miles an hour, and no passengers are conveyed along the railway by steam-power.

6. The gatekeeper is instructed to warn persons from passing along the highway when engines are coming along the railway, until after the engines have passed.

7. Engine-men are not to cross the highway at a greater speed than six miles an hour, and to sound their whistle upon the approach to the highway.

I have, &c.,

JAMES MITCHELL,

Secretary to the Company.

G. R. Porter, Esq.,
&c. &c.

No. 23.

SHEFFIELD AND ROTHERHAM RAILWAY.

SIR,

Sheffield, October 6, 1841.

THE Sheffield and Rotherham Railway does *not* cross either turnpike or public highway on a level. There are good and substantial gates erected wherever any occupation road is crossed.

At Holmes Station there is an occupation road with gates, under the care of the man who attends to the switches, and also issues the tickets there; he resides in the station-house, and as the mail train is early, and the passenger and goods-trains late, he is assisted or relieved during the latter part of the day by a walking policeman, who daily perambulates the line in the early part of the day, and assists here in the afternoon and evening. These two men perform this work for 18s. per week each, with a suit of clothes each per annum; and the gatekeeper lives rent free.

Another occupation or road to a field at Brightside, is at the Brightside Station, where the gatekeeper is also ticket-clerk, and attends upwards of twelve hours per day for 18s. per week. The house is recently built there, and he will reside in it next week.

These parties have all positive instructions to keep the gates shut, and not to suffer any horse or carriage to pass whenever a train is coming in sight on the east side, or within a reasonable distance on the west side, (from 200 to 400 yards,) depending on the speed which the train is coming. The other instructions are, to be particularly careful and attentive to their duties, and at Holmes to the following instructions, which are given to the engine-drivers more particularly.

It is hereby required that all trains from Sheffield downwards shall proceed at such a speed that they can be (if required) stopped short of the Holmes crossing.

And that all trains *from* Rotherham or Masbro' shall proceed at such a rate that they can stop short of the Holmes crossing or Masbro' branch points.

And in all cases where there are meeting-trains at this place, the *up* trains shall stop until the *down* trains have passed.

When the Rotherham and the North Midland trains are both approaching the Holmes crossing *upwards* at the same time, the former shall stop, and allow the North Midland to pass.

Q

No. 22.
Wishaw and
Coltness.No. 23.
Sheffield and
Rotherham.

Appendix.

IV.
Returns relating to
Level Crossings.

No. 23.
Sheffield and
Rotherham.

Disobedience of these orders will incur the pain of instant dismissal from the Company's service.

The above are the rules by which our line is worked, as far as regards the principal crossings. There is another crossing on the level of an occupation road, where gates are erected on both sides of the railway, near Jordan Dam, to which the plate-layers and the walking policeman pay attention.

G. R. Porter, Esq.,
&c. &c.

I am, &c.,
THOMAS PEARSON.

No. 24.
London and
Birmingham.

No. 24.

LONDON AND BIRMINGHAM RAILWAY.

REPORT.

Euston Station, October 6, 1841.

IN conformity with the annexed communications from the Board of Trade which have been referred to me, I have to report that there are ten bye-roads cross the London and Birmingham Railway, on the level between London and Birmingham, independent of the street at the latter place leading into the goods' station.

Strong-built gates, 6 feet 6 inches in height, are erected across each end of these thoroughfares, in conformity with the 2 and 3 Vic., c. 45.

A policeman (or gatekeeper) is constantly stationed at each of these crossings, whose duty it is to keep the gates closed across the road, in conformity with the Act above named.

Positive instructions are given to the gatekeepers to this effect, and only to open the gates to allow carriages, &c., to cross the railway.

The gatekeepers receive 19s. a-week, and their clothes; they are relieved every twelve hours, and have no other employment.

The other instructions given to the gatekeepers are, to be constantly on the alert for the approach of trains, to allow nothing to cross the railway if a train be in sight, to afford every facility to persons in crossing, to signal the passing trains whether the line is clear or otherwise, and to prevent persons from trespassing on the line of railway.

The instructions given to the engine-drivers are, to proceed with caution on approaching crossings, and in hazy weather to use the whistle.

On the Aylesbury Branch there are three bye-roads which cross the railway on the level.

Similar gates to those described as being used on the London and Birmingham Railway are erected across each end of these thoroughfares.

No engine travels on the Aylesbury Branch between eight o'clock in the evening and seven in the morning; therefore between these hours the gates are shut and locked across the railway, to prevent cattle, &c., from straying upon the line.

A gatekeeper, by day, is placed at two of these crossings, and at the one adjoining the town of Aylesbury, one by day and night.

These men, as well as the engine-drivers, have precisely the same instructions as those on the London and Birmingham Railway, and they receive the same wages.

G. R. Porter, Esq.,
&c. &c.

H. P. BRUYERES, Superintendent.

No. 25.
North Midland.

No. 25.

NORTH MIDLAND RAILWAY.

SIR,

Secretary's Office, Derby, October 8, 1841.

I BEG to acknowledge the receipt of your favour of the 28th September, containing the following questions, which have received the special attention of the Directors of the North Midland Railway Company in reply. I beg to hand you the subjoined answers thereto.

1. How many turnpike-roads and highways are crossed on a level by the North Midland Railway?—There are no turnpike-roads crossed on the level, and only one highway, and that one is very little used by the public.

2. Are good and sufficient gates erected across each end of such turnpikes or highways at each of such crossings, in conformity with the 2 and 3 Vic., c. 45?—Good and sufficient gates are erected across this highway, at the place of crossing.

3. Are gatekeepers stationed at each of such crossings in conformity with the said Act?—Yes.

4. What wages do such gatekeepers receive? How many hours do they remain on duty? Have they any other employment?—Nineteen shillings per week; constantly, night and day, having a house to live in; and have no other employment.

5. Are positive instructions given to such gatekeepers to keep such gates constantly shut across the roads, unless when opened by the gatekeeper to allow carriages, &c., to cross the railway?—Yes.

6. What other instructions are given to such gatekeepers?—That they are responsible for the proper condition of the fixed signals by day and night, which are attached to the gates.

7. What instructions are given to engine-drivers as to precautions to be observed on approaching crossings?—Their attention is called to the fact that a red light or red board shows that the gate is shut across the line, and a white light that it is shut across the road.

G. R. Porter, Esq.,
&c. &c.

I am, &c.,
H. PATTESON, Secretary.

No. 26.

MANCHESTER AND LEEDS RAILWAY.

ANSWERS.

October 8, 1841.

SIR,

1. THERE are no turnpike-roads crossed on a level. Two highways are crossed on a level.
- 2 and 3. The Acts 2 and 3 Vic. have been complied with.
4. Gatekeepers' wages vary according to circumstances, as do the number of hours they are at their posts. They have no other duties.
5. Yes.
6. To prevent trespass, and look out and repeat night-signals, for which purposes they are provided with rockets and blue lights.
7. To keep a good look-out, and stop, if doubtful of the road being clear.

G. R. Porter, Esq.;
&c. &c.

JOHN JELlicORSE, Secretary.

Appendix.

IV.

Returns relating to
Level Crossings.No. 26.
Manchester and
Leeds.

No. 27.

NORTH UNION RAILWAY.

Preston, October 9, 1841.

SIR,

In compliance with your letter of the 28th September, intimating the request of the Lords of the Committee of Privy Council for Trade for returns to seven questions stated therein; referring to the same in their order, I am desired to state in answer to the—

1. Two turnpike-roads and six highways are crossed on a level.
2. There are good and sufficient gates erected across each end of such turnpikes or highways at such crossings.
3. There are gatekeepers stationed at such gates at such crossings.
4. The wages are 25s. per week, (two excepted, whose wages are 18s.;) they live generally in lodges on the premises, and open the gates, if required, at night as well as day; they also attend trains in passing.
5. Positive instructions have always been given to keep the gates constantly shut, unless when opened to allow carriages, &c., to cross the railway.
6. Other instructions are comprised in the bye-laws and rules and regulations of the Company, which have been approved by the Board of Trade, and besides which they are repeatedly enjoined to be careful, vigilant, and attentive to prevent accidents of any kind, whether instructed or not.
7. To keep a good look-out on approaching any of the sidings, crossings, or stations, where either passengers, goods, or coals are received, in order that they may be in readiness to stop in time in the event of anything being in the way, and making it necessary to do so.

Verbal instructions have been repeatedly given to use the whistle freely on all occasions; and the same subject forms part of new instructions now in the press.

I have, &c.

G. R. Porter, Esq.,
&c. &c.

JAMES CHAPMAN, Secretary.

No. 28.

LEEDS AND SELBY RAILWAY.

No. 28.
Leeds and Selby.

REPLIES to the Queries addressed by the Railway Department, Board of Trade, to the Secretary of the Leeds and Selby Railway.

1. The Leeds and Selby Railway crosses four turnpikes or highways on a level.
2. Good and sufficient gates are erected across the said turnpikes or highways at each end, in conformity with the recited Act.
3. Gate-houses are built, and gatekeepers stationed at each of those crossings.
4. The gatekeepers have their houses rent-free; three of them have 15s. each per week, and one has 12s. per week, with no other employment, except one at the turnpike near the Selby Dépôt, who has to attend some points; but he is provided with a youth to assist him.
5. Positive instructions are given to those gatekeepers to keep their gates constantly shut across the roads during the time they are on duty, unless when opened to allow carriages, &c., to cross the railway. The time they are off duty, viz., from 8½ P.M. to 2½ A.M., there being no trains passing, the gates are shut across the railway.
6. Instructions are given to the gatekeepers to show a red light to the engines to stop them if necessary when anything prevents the gates being shut, and during the night to show a bright light when all is clear for them to proceed.
7. The engine-drivers are strictly ordered not to pass any gateway or crossing of roads (turnpike or highway) until the gateman has given the proper signal; and in all cases to bring up if the red flag or light is exhibited. That in case they have to pass in the night from 8½ P.M. to 2½ A.M. they are to stop the engine, and the fireman is to open the gates and shut them across the highway, unless the gateman is up, and exhibits the bright light.

Q 2

Appendix.

SIR,

Selby, October 9, 1841.

IV.
Returns relating to
Level Crossings.

THE foregoing are the answers to the questions sent to me on behalf of the York and North Midland Railway Company, who, having leased the Leeds and Selby Railway, have the management of it vested in them.

No. 28.
Leeds and Selby.

G. R. Porter, Esq.,
&c. &c.

I have, &c.

PETER CLARKE, Superintendent.

No. 29.
Grand Junction.

No. 29.

GRAND JUNCTION RAILWAY.

Grand Junction Railway Office,

Liverpool, October 7, 1841.

SIR,

I HAVE to acknowledge the receipt of your letter under date the 28th ultimo. In accordance with the request of the Lords of the Committee of Privy Council for Trade, I am desired by the Directors of the Grand Junction Railway to furnish you with the information required:—

1. No turnpike-roads are crossed on a level by the Grand Junction Railway Company. Nine highways are thus crossed.

2. Good and sufficient gates are erected across all such surface crossings.

3. Gatekeepers are stationed at all such highways, as required by the Act.

4. The wages these men receive vary from 12s. to 20s. a-week; none are on duty more than 12 hours. At only one highway has the gatekeeper any other employment, viz., at Jockey-lane, and his duties there embrace the charge of the "points."

5. Positive instructions are given to such gatekeepers to keep such gates constantly shut across the roads, unless when opened by the gatekeepers to allow carriages, &c., to cross the railway.

6. The following are the other instructions given to gate-keepers:—

"XXXIV.—All gatemen and policemen shall be constantly on the look-out, and shall open the proper gate when an engine has to pass through, and render every assistance in their power in case of accident or in foggy weather.

"XXXV.—All gatemen shall communicate to the engineman passing through the gates verbally, or by signals, if caution is required from the engineman as he proceeds.

"XXXVI.—Every gateman shall light his gate-lamp at dusk, and shall have his hand-lamp constantly trimmed and burning, and ready to give such signals as may be required.

"XXXVIII.—If a gateman, owing to an accident, or from any other extraordinary cause, wishes to stop an engine which is approaching, he must not only show his red light, but waive his hand-lamp conspicuously up and down, and till the engine comes up; and all enginemen are required to stop on this signal being given; and a gateman must make this signal to an approaching engine, if a previous engine has passed through his gate only three or four minutes before.

"XXXIX.—All policemen and gatemen are required, when a luggage-train approaches their several stations, and before it comes up, to go on the line, and inspect both sides of the train, to ascertain whether any of the loading (particularly bags of cotton) has slipped, so as to overhang the waggon more than when first loaded; and if such be the case, to make immediate signal for the train to stop, in order that the loading may be put right, and fastened on again before the train proceeds.

"XL.—Policemen, gatemen, and all other servants of the Company, as also the plate-layers and workmen employed on the line, are ordered to report the names of enginemen who may disregard their signals."

7. "All enginemen are required to give one loud whistle as they pass Platt's Bridge in coming down Whiston inclined plane, and when approaching road crossings on the level, particularly at Rainhill-gate and at Wavertree-lane."

I have only to add that great caution is enjoined, and implicit attention required to all orders and regulations affecting crossings on the level.

I have, &c.

G. R. Porter, Esq.,
&c. &c.

MARK HUISE, Secretary.

No. 30.
Stockton and
Darlington.

No. 30.

STOCKTON AND DARLINGTON RAILWAY.

SIR,

Darlington, October 9, 1841.

1. TWENTY-TWO turnpike-roads or highways are crossed on the level, viz., 5 turnpikes and 17 township highways.

2. Gates in conformity with the Act are erected across each end of such turnpikes and highways, and no complaints have been made of insufficiency.

3. Gatekeepers are stationed at each of such crossings with the exception of Lands, Evenwood, Coatham-lane, and Whessoe-lane; these are roads very little frequented, and almost useless.

4. The wages of the gatekeepers who attend day and night are 21s. per week; those for days only average about 14s. per week.

The greater part are constantly on duty night and day, from Monday morning till after the engines cease leading on Saturday night. The day-men, four in number, only attend from six in the morning till eight at night; these four men are placed where there is little or no traffic. No passenger-trains travel between the hours of eight in the evening and seven in the morning. One man is employed breaking stones occasionally; another works at the trade of a shoemaker; the remainder give their whole attention to the gates.

5. The Directors gave positive instructions that the gates should be kept constantly shut across the roads, unless when opened by the gatekeeper to allow carriages, &c., to cross the railway; but the magistrates have insisted that the gates should be kept open at all times except when an engine is within 200 yards of the highway, when they are to be closed until it be passed. The gatekeepers are now acting in conformity with this direction, the magistrates having threatened to summons the gatekeepers if this order was not strictly attended to.

6. To watch the speed of the engines, and to report any infringement of the bye-laws; to prevent all persons, except those employed by the Company, from walking along the line; and to secure all cattle that may be found straying on the railway. Not to leave their gates, under any pretence whatever, without the knowledge and sanction of the superintendent of police, who always, in case of absence, provides a substitute; and to watch that the signals be given by enginemen at a post marked at a proper distance from the road be strictly attended to, and carefully attend that all signals be observed for the protection of the public.

7. The enginemen have orders to moderate their speed on approaching crossings, invariably to ring their bells or blow their whistles, notice boards being placed at proper distances, and to keep a sharp look-out on the gates, gatekeepers, and signals.

The principal traffic on this railway is mineral. Strict orders are given to the drivers not to exceed eight miles per hour, and in crossing highways five miles only.

Signed by order of the Committee of Management,

G. R. Porter, Esq.,
&c. &c.

SAMUEL BARNARD, Secretary.

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IV.
Returns relating to
Level Crossings.

No. 30.
Stockton and
Darlington.

No. 31.

LONDON AND CROYDON RAILWAY.

No. 31.
London and
Croydon.

1. How many turnpike roads and highways are crossed on a level by the London and Croydon Railway?—There were originally three, one of which (on Penge Common) has been carried under the railway by means of an archway, agreeably to the provisions of a clause in this Company's Act of Parliament passed in the session of 1840; and the Directors in the autumn of that year turned their attention to the diversion of one other of these highways near Norwood (Jolly Sailor station), to avoid the crossing of the railway at that part; but they were opposed in their plan for effecting that diversion by the Board of Highways at Croydon, in whose district it lies. Since the accidents on the North Union and Bristol and Exeter Railways, the Directors have renewed their application to the Board of Highways, and they have likewise instructed their engineer to prepare a plan, and take other measures for the diversion of the highway at the other crossing, near Sydenham Hill (Dartmouth Arms station), with the intention of avoiding that also.

2. Are good and sufficient gates erected across each end of such turnpikes or highways at each of such crossings in conformity with the 2nd and 3rd Victoria, cap. 45?—Yes.

3. Are gatekeepers stationed at each of such crossings in conformity with the said Act?—Yes.

4. What wages do such gatekeepers receive? How many hours do they remain on duty? Have they any other employment?—The pay of gatekeepers is 20s. per week, with a deduction of 1s. per week for the sick-fund. They are on duty from half-past seven in the morning until the last train has run, which may be considered as 10 o'clock, or nearly so, in summer, and nine o'clock in the winter. The gatekeepers are police constables, and are employed on alternate days at the gates, and attending to the traffic on the stations adjoining.

5. Are positive instructions given to such gatekeepers to keep such gates constantly shut across the roads, unless when opened by the gatekeeper to allow carriages, &c. to cross the railway?—Positive instructions are given to keep the gates closed across the roads, excepting to allow carriages to pass through when it is known that no engine is about to pass, and then only for the time necessary to allow the carriage or passenger to cross.

6. What other instructions are given to such gatekeepers?—They are fully instructed in the necessary caution, and well trained in the signals of the railway, and show both by day and night the proper signals of "all right," or of "obstruction," according to the state of the gates.

7. What instructions are given to engine-drivers as to precautions to be observed on approaching crossings?—Engine-drivers have no particular cautions in reference to level crossings, beyond the general duty of cautiousness, and looking out for signals. Each gate is provided with a large red disc which is exhibited in the middle when closed across the line, and a red light is similarly shown at night when the gate is closed, and turns with the gate, so that no mistake can arise. The two level crossings are situated close to stations at which the trains almost invariably stop, and in approaching which the engine-men whistle.

G. R. Porter, Esq.,
&c. &c.

R. S. YOUNG, Secretary.

Appendix.

IV.

Returns relating to
Level Crossings.No. 31.
London and
Croydon.

LETTER sent to W. Edwards, Esq., Chairman of the Board of Highways, Croydon, relative to the Level Crossing at the Jolly Sailor Station.

Board of Trade, October 14, 1841.

SIR,
THE Directors of the London and Croydon Railway Company having represented to the Lords, &c., that they are anxious to avoid the level crossing of the highway near the Jolly Sailor station by carrying the road under the railway, and that they have applied to the Board of Highways at Croydon for that purpose, I am directed by their Lordships to state that it appears to them highly desirable for the public safety that this object should be effected.

I am, &c.

S. LAING.

W. Edwards, Esq.

London and Croydon Railway Company,
205, Tooley Street, Oct. 19, 1841.

SIR,

I HAVE received a letter from the Board of Highways at Croydon, from which it appears that some misapprehension must have arisen in the minds of the Board of Trade in respect to the method proposed by the Directors of this Company of diverting the highway near the Jolly Sailor station at Norwood, where the London and Croydon Railway crosses the said highway.

In order to present the Board of Trade with a clearer view of the intention of the Directors of the Croydon Company, I have herewith transmitted the plan which was presented last autumn to the Board of Highways for their sanction.

In this plan the road marked "to Penge," is already an excellent road which leads over the railway bridge, and by continuing which along the proposed "new road," coloured brown, into the present road which crosses the railway, that crossing would be avoided. The roads with dotted lines marked "proposed road," were suggested by a member of the Board of Highways (not officially), as an improvement upon the plan of the Directors; and to that road which is substituted for the road coloured brown the Directors see no objection; but that which appears to them a useless deviation from the road already constructed they cannot consent to make, because part of it passes through a brick and tile-field in full work, and the other part through a gentleman's garden-ground, and would consequently involve very considerable, and, as they conceive, unnecessary cost.

I beg permission also to enclose (with the plan) a paper conveying the sentiments of the highly respectable individuals whose signatures it bears, and who are the principal persons usually travelling the road in their carriages, as to the eligibility of the plan submitted herewith, to which the observations contained in that paper apply.

I am, &c.,

G. S. YOUNG, Secretary.

G. R. Porter, Esq.,
&c. &c.

To the Directors of the London and Croydon Railway Company.

GENTLEMEN,

WE, the undersigned, beg to represent that we are well acquainted with, and frequently pass along, the highway leading from Woodside to Norwood, and which crosses the Croydon Railway on a level near the "Jolly Sailor" public house. That we have heard that you are willing, at your own cost, to alter and divert such highway in a northerly direction across the adjacent land into the road leading to the bridge already erected over the railway; so that the traffic would pass over such bridge instead of crossing the railway on a level. That we, individually, should much prefer travelling the additional distance which this alteration would occasion to the delay which we are unavoidably subjected to if we happen to arrive at the crossing just as the trains are about to pass, and to the disagreeable sensation we at all times experience when our horses and carriages pass over the train-plates of the railway; and we are decidedly of opinion that the convenience and comfort of the public, whether travelling by the railway or by the highway in question, would be greatly enhanced if the highway were diverted in the manner proposed by you.

November, 1840.

(Signed)

W. CANTUAR.
ELDON, Shirley.
HENRY PHILIPPS, Woodvale, Norwood.
S. F. MAUBERT, Norwood.
JOHN BOYD, Norwood.
FRED. A. LEMANN, Norwood.
A. HAY, Croydon Common.
JOHN BROTHERS, Norwood.
JOHN DIXON, Norwood.
AR. ANDERSON.
CHARLES REYNOLDS.
NATH. HARDEN, Norwood.
EDMUND HARDEN, Curate, Norwood.
JAMES FIELDING, Norwood.
THOMAS G. KNAPP, Norwood.
CHARLES BINGHAM, Norwood.
HENRY F. WOLLASTON, Norwood.
EDWARD COLE, Croydon Common.
DIANA H. WILLIAMS, Norwood.

HENRY LEE, Weston Hill, Norwood.
G. D. SEWELL, Weston Hill, Norwood.
J. H. ROWLAND, Norwood.
JOHN GETTING, Norwood.
P. STORR, Weston Hill, Norwood.
THOMAS S. CARTER, Ballards.
W. TAYLOR, Croydon.
J. W. SUTHERLAND, Croydon.
HENRY LINDSAY, Vicarage, Croydon.
G. W. MATTHEW, } Churchwardens
JOHN KEATES, } of Croydon.
JAMES COX, Croydon.
JOHN WELLER, Warden of St.
James's, Croydon.
WILLIAM DIXON, Norwood.
CHAS. HARRINGTON, Blind Conner.
THOS. POWELL, Woodside Green.
HEWITT DAVIS, Spring Park.

LETTER sent to W. Edwards, Esq., Chairman of the Board of Highways, Croydon, relative to the Level Crossing at the Jolly Sailor Station on the London and Croydon Railway.

Appendix.

IV.

Returns relating to Level Crossings.

No. 31.

London and Croydon.

SIR,

October 19, 1841.

WITH reference to my letter of the 14th October, I am directed, &c., to inform you that their Lordships were led to believe, from the communication made to them by the Directors of the London and Croydon Railway Company, relative to the level crossing at the Jolly Sailor station, that it was the wish of the Company to avoid the crossing by carrying the road *under the railway*, but it has been since explained to them that this is not the case, and that the proposal of the Directors was to divert the road so as to carry it over the railway by a bridge already in existence.

Their Lordships do not wish to offer any opinion respecting the arrangement which ought to be made between the Railway Company and the Board of Surveyors, but merely to express their opinion that it is very desirable that if possible some amicable agreement should be come to by the parties by which the level crossing in question may be avoided.

W. Edwards, Esq.,
&c. &c.

I am, &c.
S. LAING.

IN reply to Letter from this Office of the 19th instant, relative to the Level Crossing at the Jolly Sailor Station of the Croydon Railway.

SIR,

Croydon, October 23, 1841.

THE Board of Surveyors of the Highways of the parish of Croydon beg to acknowledge the honour of your communication of the 19th instant from the Lords of the Committee of Privy Council for Trade, relative to the level crossing of the public highway at the railway Jolly Sailor station.

The Board of Surveyors avail themselves of their first meeting to lay before their Lordships the state of the case with regard to this road; they trust they shall be able to convince the Committee that it is perfectly practicable to carry the parish road under the railway, and therefore altogether unnecessary to create a deviation by which, in order to advance 540 feet, they must travel 1830 feet, with gradients so considerable as to much increase the distance; add to this the new part of the road will entail an additional perpetual expense upon the parish for repairs, when it is remembered that this new line, whatever it may be, is to last as long as Croydon itself. The Board feel that nothing could justify them in accepting the proposed deviation but the impossibility of executing the more direct line.

S. Laing, Esq.,
&c. &c.

I am, &c.,
(Signed by order of the Board)
J. W. EDWARDS, Chairman.

WITH Copy of a Letter to the Chairman of the Board of Highways, Croydon, relative to the Road at the Jolly Sailor Station, &c.

SIR,

London and Croydon Railway Company,
205, Tooley Street, Nov. 6, 1841.

I BEG leave to return herewith the original plan of the projected deviation of the road for the purpose of avoiding the crossing of the Croydon Railway by the high road near the Jolly Sailor station, and a copy of the recommendation with the signatures thereto which accompanied it.

I take the liberty at the same time to furnish you with the copy of a letter addressed to the chairman of the Board of Surveyors of the parish of Croydon, in which the Directors of this Company have made an offer, whereby the Board of Surveyors will be enabled to accomplish the object desired, both by the Lords of the Committee of Privy Council for Trade and the Directors of the Croydon Railway Company, in the manner most agreeable to themselves.

G. R. Porter, Esq.,
&c. &c.

I am, &c.,
R. S. YOUNG, Secretary.

COPY of Letter from the Croydon Railway Company to the Chairman of the Board of Surveyors of the Parish of Croydon, relative to taking the Turnpike Road under the Railway at the Jolly Sailor Station.

SIR,

London and Croydon Railway Company,
205, Tooley Street, Nov. 3, 1841.

I AM favoured with your letter of the 23rd October, in which you were so obliging as to enclose copies of Mr. Laing's letter of the 19th, and your reply thereto dated the 23rd ultimo, all of which have been laid before the Board; and I am instructed by the Directors of this Company to acquaint you for the information of the Board of Surveyors of the parish of Croydon, that as they appear to be unwilling to accede to the proposal made by this Company, in accordance with the wishes of the Board of Trade, to avoid the crossing at the Jolly Sailor, and as the only objection which the Directors of this Company have to the plan suggested by your Board of carrying the road under the railway is the additional expense to be incurred by that method, the Directors are prepared to place at the disposal of the Board of Surveyors the sum of 1000*l.*, upon receiving a guarantee from them that they will complete the works necessary for carrying the highway under the railway as they propose; it being expressly understood that all those works in any manner connected with the railway shall be planned and executed under the orders, and to the entire satisfaction, of the resident engineer of the Croydon Railway Company.

J. W. Edwards, Esq.,
&c. &c.

I am, &c.,
R. S. YOUNG, Secretary.

Appendix.

RELATIVE to the Level Crossing at the Jolly Sailor Station, and enclosing Copy of a Letter from the Board of Highways at Croydon.

IV.
Returns relating to
Level Crossings.

No. 31.
London and
Croydon.

SIR,

London and Croydon Railway Company,
205, Tooley Street, Nov. 17, 1841.

WITH the letter which I had the honour to address to you on the 6th instant, accompanying a plan of the projected deviation of the road near the Jolly Sailor, for the purpose of avoiding the crossing of the railway by the highway, I enclosed a copy of my letter to the chairman of the Board of Surveyors of the parish of Croydon.

I now take the liberty of communicating to you the answer to that letter (copied below), in order that the Lords of the Committee of Privy Council for Trade may have all the facts of the case before them.

G. R. Porter, Esq.,
&c. &c.

I have, &c.,
R. S. YOUNG, Secretary.

(Copy.)

SIR,

Croydon, November 6, 1841.

YOUR letter of the 3rd instant, containing proposals that the surveyors of the Board of Highways of this parish should undertake to make the tunnel under the railroad at the Jolly Sailor station at Norwood, upon receiving from the London and Croydon Railway Company the sum of 1000*l.* towards the cost of it, is a proposition that cannot upon any principle or reason be entertained for a moment.

At the same time the Board consider the making of the tunnel by your Company is the only method of insuring the satisfaction of the parishioners and the public, and they earnestly hope that the work will be proceeded with as the best mode of avoiding the danger incidental to the crossing in question.

R. S. Young, Esq.,
&c. &c.

I am, &c.,
(Signed by order of the Board)
J. W. EDWARDS, Chairman.

LETTER sent to the London and Croydon Railway Company, in reply to their Letter of the 17th November, enclosing Copy of a Letter from the Chairman of the Board of Surveyors of the Parish of Croydon, relative to the Level Crossing at the Jolly Sailor Station.

SIR,

November 19, 1841.

WITH reference to your letter of the 17th November, enclosing a copy of a letter from the chairman of the Board of Surveyors of the parish of Croydon, I am directed, &c., to state that their Lordships do not wish to express any opinion upon the question in dispute between the Company and the surveyors, which does not fall within their Lordships' province to investigate; but they regret exceedingly that it has not been found possible to arrive at an understanding for effecting an object so desirable for the public safety as the removal of the level crossing in question.

The Secretary of the
London and Croydon Railway Company.

I am, &c.,
S. LAING.

No. 32.
London and
Brighton.

No. 32.

LONDON AND BRIGHTON RAILWAY.

10, Angel-court, Throgmorton-street,
October 12, 1841.

SIR,

I BEG to hand you, for the information of the Lords of the Committee of Privy Council for Trade, the replies to the several questions contained in your communication of 28th ult.

1. There is no turnpike road crossed on a level by the London and Brighton Railway, but there are four roads on the main line, and one on the Shoreham Branch Railway open to the public that are crossed on a level, namely, the first is a parish road at the Stoats Nest Station, at 14½ miles from London, in the parish of Coulsden, and is covered with good road material; the second and third are two roads in the parish of Horley, one on each side of the station, at 25½ miles from London; they are green lanes, and there is no appearance of any hard road material ever having been put upon them; and previous to the commencement of the works of the railway at this place, they appear to have been very seldom used: the fourth and last on the main line is a green lane at 27½ miles from London, at the boundary of the counties of Surrey and Sussex; there is no appearance of any hard road material ever having been put upon it, but it is nevertheless more used than the two last-mentioned roads. The crossing on the level on the Shoreham Branch Railway is just half way between Brighton and Shoreham, in Portslade parish, and is a parish road but little used.

2. Good and sufficient gates are erected across each end of the aforesaid roads, in conformity with the 2 and 3 Vic. c. 45, and herewith is sent a drawing of the gate as erected.

Note.—On one of each of the gates on each side of the road is fixed a lamp at night, with red and white glasses. When the gates are shut across the public road, the lamps show red lights to the public road, and white lights each way to the railway, thereby showing that the public road is closed, and that the railway is all clear. On the contrary, when the gates are closed across the railway, the lamps show red light to the railway each way, and white lights to the public road, thereby showing that the railway is closed, and that the public road is open. In the day-time each pair of gates have large semicircular discs fixed on both sides thereof, painted a bright red, and when the gates are shut across the railway, these discs present to the railway, each way, a large red circular disc four feet in diameter.

3. At every crossing policemen are stationed during the day and night.

4. The day policemen go on duty at 8 o'clock A.M., and remain until 9 o'clock P.M. The night policemen go on duty at 9 o'clock P.M., and remain until 8 o'clock A.M. The wages of these gatekeepers are from 20s. to 23s. per week, and they have no other employment.

5. Positive instructions are given to the gatekeepers to keep the gates constantly shut across the roads, unless opened to allow carriages, &c. to cross the railway.

6. Constant watchfulness and attention.

7. The instructions to the engine-driver are, that when the white lights are shown to the railway, or the gates are open across it, he is to go on; but when the red lights are shown to the railway, or when the gates are shut across it, and the red discs are presented to the railway each way, he is to stop the engine until the white lights are shown, or the gates open across the railway and shut to the public road.

G. R. Porter, Esq.,
&c. &c.

I have, &c.
THOMAS WOOD, Secretary.

Appendix.

IV.

Returns relating to
Level Crossings.

No. 32.
London and
Brighton.

No. 33.

BIRMINGHAM AND GLOUCESTER RAILWAY.

IN reply to Circular from this Office of the 28th September, relative to Level Crossings.

1. How many turnpike roads and highways are crossed on a level by the Birmingham and Gloucester Railway?—Sixteen; none of which are turnpikes.

2. Are good and sufficient gates erected across each end of such turnpikes or highways at each of such crossings in conformity with the 2 and 3 Vic. c. 45?—There are gates which are believed to be in conformity with this Act.

3. Are gatekeepers stationed at each of such crossings in conformity with the said Act?—Yes.

4. What wages do such gatekeepers receive?—7s. to 18s. per week. How many hours do they remain on duty?—Have houses, and are always on duty. Have they any other employment?—Three solely occupied with the gates; thirteen have other duties not incompatible with their attention to the gates.

5. Are positive instructions given to such gatekeepers to keep such gates constantly shut across the roads, unless when opened by the gatekeeper to allow carriages, &c. to cross the railway?—Yes.

6.—What other instructions are given to such gatekeepers?—See printed book, p. 17.

7. What instructions are given to engine-drivers as to precautions to be observed on approaching crossings?—To look out for red signal or any obstruction.

G. R. Porter, Esq.,
&c. &c.

GEORGE KING, Secretary.

No. 33.
Birmingham and
Gloucester.

No. 34.

ARDROSSAN RAILWAY.

SIR,

October 11, 1841.

IN answering to the requisition made by the Board of Trade, of date the 28th ult., I beg to send you the following return:—

1. The main line of railway on which alone locomotive power is used, crosses one turnpike on the level, but a new line is in progress by which the road will be carried over the railway. It crosses also three parish roads, but operations are now in progress for deviating two of these, which will be finished in a few weeks, and the crossings effected by bridges, one below, the other over the railway. It also crosses two occupation roads or lanes, for both of which the Railway Company are preparing foot-bridges over the railway, so as to confine the crossing to carts, carriages, &c., the passage of which is very infrequent.

2. There are good and sufficient gates erected at each of the crossings, that are to be permanent. One set of gates is, in conformity with an especial provision in the Company's statute, kept shut across the railway except when trains approach, when they are opened from the railway and shut across the road. The others are also in terms of the Company's Act, kept shut across the road, except when they require to be opened for the passage of carts, carriages, &c.

3. Gatekeepers are stationed at each of these crossings, and policemen are stationed at the temporary crossings, which are in progress of being shut up.

4. They receive 12s. per week, and a suit of clothes annually. They remain from twelve to fourteen hours daily on duty. They have no other employment.

5. Instructions are given to the keeper of the set of gates first above-mentioned, to keep them always shut across the railway, except when trains are approaching; when they are opened up and shut across the road. And to the others the instructions noted in No. 5 of the requisition are given.

6. The other instructions given to each gatekeeper and policeman are to keep their respective crossings at all times clear for the passage of the trains; and in the event of any obstruction arising which would have a tendency to impede the passage of the trains, to hoist their red signals in place of the white ones which are exhibited when all is clear.

7. The instructions given to the engine-men are to keep a look-out for the signal flags or lights at these crossings, and regulate his motions thereby. The three permanent crossings being all within 200 yards of Saltcoats Station, where all the trains stop, the speed across any of them is never above six or eight miles an hour.

G. R. Porter, Esq.,
&c. &c.

I have, &c.,

JAMES MOFFAT,
Secretary and Superintendent.

R

No. 34.
Ardrossan.

Appendix.

IV.
Returns relating to
Level Crossings.

No. 34.
Ardrossan.

LETTER sent to the Ardrossan Railway Company relative to shutting the Gates across the Road instead of across the Railway.

SIR,

Board of Trade, October 11, 1841.

WITH reference &c., I am directed &c. to observe that their Lordships consider that the provisions of the General Act 2 and 3 Vict. c. 45, supersede those of Local Acts, and therefore that the directors will be quite justified in keeping the gates at all level crossings closed across the road, instead of across the railway, if they consider the former practice more conducive to the public safety.

I am, &c.,

S. LAING.

To the Secretary of the Ardrossan
Railway Company.

A similar letter was written on the 15th October to the Preston and Wyre Railway Company.

No. 35.
Preston and Wyre.

No. 35.

PRESTON AND WYRE RAILWAY.

1. Nine.
2. Yes, the gates are of oak, and of sufficient length to close or shut off the highway from the railway at the time of any train passing. They are four feet high, and surmounted with iron spikes through their whole length.
3. A gatekeeper is stationed at each gate.
4. The gatekeepers' wages are 12s. per week, and they are on duty from seven in the morning till eight at night in summer, and from seven in the morning till six or half-past in the evening during winter. They have no other employment.
5. The Acts of this Company specially require that the gates should be kept constantly closed across the railway, except during the passing of the trains, and the gatekeepers accordingly have instructions to shut them across the highway a few minutes before the passing of the trains, and to restore them to their previous state (shut across the railway) immediately after the trains have passed; which latter is strictly enforced by the neighbouring inhabitants.
6. They are ordered on pain of dismissal never to leave their gates during their hours of duty, and on no account to allow any person or carriage to cross the line after a train is in sight. They are also furnished with three flags (red, white, and green) to make signals to the drivers of the trains, and likewise with a revolving and coloured signal lamp for the same purpose, with which they are to give a signal to every train.
7. The engine-driver is ordered to pay particular attention to the signals displayed by the gateman, and in case of no signal being shown by them, to stop his train before arriving at the gates. Each gate has also screwed upon the top bar a large round piece of wood, painted red, which is visible for about a mile, and informs the driver in the day-time of the exact position of the gates.

No. 36.
Llanelly.

No. 36.

LLANELLY RAILWAY AND DOCK.

SIR,

Old Broad-street, London, October 14, 1841.

IN reference to your circular of the 28th ult., which has been forwarded to London by our superintendent at Llanelly, to whom it was addressed, the Committee of Management desire me to make the following answers to the several interrogatories:—

1. On a branch of the railway (about two miles in-length) one turnpike road is crossed on the level; but no locomotive engine is, or is intended to be, used on it.

On the main line no turnpike roads cross on a level, although there are some highways; but on a branch from the main line (called Cwm Ammon) there are two turnpike roads crossing on a level, but no locomotive engines are used on this branch.

2. Good and sufficient gates have been erected across the highways and turnpike roads, (referred to in No. 1) and it is apprehended in conformity with the 2 and 3 Vic. c. 45.

3. Gatekeepers are stationed at each of the crossings, except on the Cwm Ammon Branch, (See No. 1.)

4. The wages paid the gatekeepers are 15s. a-week. They remain twelve hours on duty, and have no other employment. Cottages have been erected near for their residence.

5. The gatekeepers are strictly enjoined and required to keep the gates constantly shut across the roads, unless when carriages require to pass over the line.

6. General instructions as to caution and attentiveness have been given to the gatekeepers.

7. The engine-drivers are not allowed to drive at more than nine miles per hour; and in fact the speed seldom exceeds seven miles to the hour. They are most strictly enjoined and required to observe the above rate of speed, and to sound the whistle at a proper distance on approaching any crossings.

There is scarcely any passenger-traffic, coal and mineral produce being the chief and almost only trade over the line to Llanelly.

The delay in answering your communication is to be attributed to its being addressed by you to Llanelly, instead of to myself as secretary to the Company.

I shall esteem it a favour if in future all communications which may have to be made be addressed to me instead of our engineer in Wales.

I have &c.,

JOHN BIGG, Secretary.

G. R. Porter, Esq.,
&c. &c.

No. 37.

ST. HELEN'S AND RUNCORN GAP RAILWAY.

SIR,

St. Helen's, October 28, 1841.

I HAVE the honour to acknowledge the receipt of your circular of the 28th ultimo, and have delayed answering until we had altered the gates across our railway, in compliance with the Acts 2 and 3 Vic., c. 45, and the Directors desire me to express their regret they were not earlier acquainted with its provisions.

1. This railway crosses eight highways or statute labour roads, but upon the principal portion of the road, where four of the highways are intersected, nothing but coals and merchandise is carried, and the engines are restricted to a speed of eight to ten miles per hour; upon the other portion, passengers and general merchandise are carried at a speed not exceeding 10 miles per hour.

2. Good and sufficient gates are put up across each end of the highways, agreeably to the provisions of the Act 2 and 3 Vic., c. 45.

3. Gatekeepers are placed at each of the said gates.

4. The wages of the gatekeepers at the two principal roads have been fixed at 12s. per week, including house-rent and coals; upon the other six the amount of remuneration has not yet been fixed. The time they will be required will vary, but generally from 6 A.M. to 6 P.M.

5. They will not have any other employment. Positive instructions are given to all gatekeepers to keep the gates closed, opening them only when required to allow carriages, &c., to cross the railway.

6. Instructions are also given to the gatekeepers to keep a good look-out, and not allow any vehicle to cross the railway until they are satisfied that the road is free from danger.

7. All engine-drivers have a book of instructions, which they are desired to have always on their person, and which rules are read over to them, one of which requires them to sound their whistles at a distance of 300 yards on approaching any road crossing on the level.

I am, &c.,

F. W. JAMES, Secretary.

G. R. Porter, Esq.,
&c. &c.

Appendix.

IV.

Returns relating to
Level Crossings.

No. 37.

St. Helen's and
Runcorn Gap.

No. 38.

BIRMINGHAM AND DERBY JUNCTION RAILWAY.

No. 38.

Birmingham and
Derby.

1. How many turnpike-roads and highways are crossed on a level by the Birmingham and Derby Junction Railway?—Five, of which two are at Burton Station, where all trains stop, and one at Coleshill Station.

2. Are good and efficient gates erected across each end of such turnpikes or highways at each of such crossings, in conformity with the 2 and 3 Vic., c. 45?—Yes.

3. Are gatekeepers stationed at each of such crossings in conformity with the said Act?—Yes.

4. What wages do such gatekeepers receive? How many hours do they remain on duty? Have they any other employment?—From 14s. to 19s. per week. They are on duty 12 hours, except at night, when the men leave after the mail-train has passed. Two of the men at one of the crossings, where the Coleshill Station is placed, book passengers for the trains which stop there.

5. Are positive instructions given to such gatekeepers to keep such gates constantly shut across the roads, unless when opened by the gatekeeper to allow carriages, &c., to cross the railway?—Yes.

6. What other instructions are given to such gatekeepers?—The gatekeepers are instructed to exhibit a white signal when an engine or train is in sight, in order that the engine-men may know that the gatekeeper is aware of the approach of the train. They are required to have the gate-lamps and hand-lamps lighted at dusk, and ready to give such signals as may be required. In foggy weather they are directed to place a green signal 300 yards on each side of the gate.

7. What instructions are given to engine-drivers as to precautions to be observed on approaching crossings?—The engine-drivers are directed to keep a good look-out in passing all level crossings; in foggy weather, and when the signals cannot be seen at some distance, to use the steam-whistle, and to approach at such a speed as will enable them to stop at the crossing if necessary.

October 19, 1841.

J. C. BIRKENSHAW.

No. 39.

LEICESTER AND SWANNINGTON RAILWAY.

No. 39.

Leicester and
Swannington.

1. The Leicester and Swannington Railway crosses on the level one turnpike road and twelve highways, of which two are crossed twice at short intervals. Many of such highways are little frequented.

2. Good and sufficient gates are erected across each end of such turnpike-road and highways at each of such crossings.

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No. 39.
Leicester and
Swannington.

3. Gatekeepers are stationed at each of such crossings. For the most part they are labourers residing on or close to the crossings, who engage with the Company that they or some capable member of their families shall attend to the gates.

4. The wages which the gatekeepers receive are particularized in the schedule hereto. They are on duty from six in the morning until six in the evening. On the part of the line from Leicester to Bagworth there are eight trains up and down daily. Beyond Bagworth only one engine is worked, which passes to and fro between Bagworth Plane and Long Lane, in summer four times, and in winter six times daily, and beyond Long-lane on an average twice only daily.

5. Instructions are given to every gatekeeper to close the gates at the approach of and during the passage of each train.

6. Every gatekeeper is instructed to place a red signal flag on the gates to signify that the train is approaching.

7. Every engine-driver is instructed to blow the steam-whistle of the engine at least 200 yards before his arrival at each crossing; if he neglects this duty, he is fined for the first and second offence, and discharged from the service of the Company if his general conduct in this particular is proved to be negligent.

The Leicester and Swannington Railway is not much used as a passengers' line, but almost exclusively for the conveyance of coals, lime, and stone. There is only a single line of rails, and the trains travel at a slow pace, not exceeding, inclusive of stoppages, 12 miles an hour; so that the risk to travellers along the roads crossed by it is comparatively small.

Schedule of Crossings and Wages.

Ashby-de-la-Zouch, turnpike-road.—5*s.* per week.

Foss Lane.—3*s.* 6*d.* per week, being the estimated value of a cottage, the property of the Company, close to the gates.

Glenfield Lane.—2*s.* 6*d.* per week; lives in a cottage belonging to the Company close to the gates.

Kirby.—2*s.* 6*d.* per week; lives in a house close to the gates.

New Bridge Lane, two crossings merging into one road.—8*s.* per week for attending to the crossings, and for opening in a morning and shutting at night gates in the neighbourhood across the railway; a hut or watch-box to be in when on duty.

Desford Lane.—2*s.* 6*d.* per week; resides close to the spot.

Merry Lees.—4*s.* per week; resides in a house purposely erected by the Company close to the gates.

Thornton Lane.—2*s.* 6*d.* per week; resides in a house close to the gates.

Battle Flat.—4*s.* per week.

Beveridge Lane.—9*s.* per week for attending to this crossing, and opening and shutting night and morning gates in the neighbourhood across the railway.

Long Lane.—2*s.* 6*d.* per week.

Mantel Lane.—This duty done by one of the Company's engine-cleaners, the engine-shed being close to the gates.

Syring Lane.—This duty done by a stationary engine-man in the employ of the Company, the engine-house being close to the gates, and the locomotive not passing more than three times a-day at this time of the year.

No. 40.
Great Western.

No. 40. GREAT WESTERN RAILWAY.

SIR,

Princes Street, Bank, December 11, 1841.

I BEG now to transmit to you the information required by your circular letters addressed to me, dated 28th September, respecting the crossings of public roads on a level with the Great Western, Bristol and Exeter, and Cheltenham and Great Western Union Railways.

1. There are no turnpike-roads crossed on a level by either of the said railways.

The number of highways crossed by them respectively are as under:—

Great Western Railway	16
Bristol and Exeter.	4
Cheltenham and Great Western Union	2

2. Good and sufficient gates are erected across each end of such highways, as required by the Act of 2 and 3 Vic., c. 45.

3. Gatekeepers are appointed to attend at each of such crossings.

4. Such gatekeepers receive from 19*s.* to 23*s.* each per week, besides their clothes. The usual time for all policemen (including gatekeepers) is about 13 hours in the day, or 11 hours at night. They attend to give signals, and in some instances, where very little traffic crosses the road, they have to inspect a small portion of line in immediate contiguity to the gates.

5. Instructions are given to the gatekeepers, as suggested by the question.

6. The usual signal instructions are given to gatekeepers.

7. The engine-drivers are instructed to keep a good look-out before they approach any crossings, and to sound the whistle as notice to gatekeepers.

I have, &c.,

G. R. Porter, Esq.,
&c. &c.

CHARLES A. SAUNDERS, Secretary.

LETTER relative to shutting Gates at Level Crossings, &c.

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Returns relating to
Level Crossings.

No. 40.

Great Western.

SIR,

London Terminus, Paddington, December 4, 1841.

A QUESTION having arisen as to the legal effect of the Act of 2 and 3 Vic., c. 45, "relating to highways," which enacts that "wherever a railroad crosses any turnpike-road or highway, the proprietors of such railroad shall make and maintain good and sufficient gates across each end of such turnpike or other road, at each of the said crossings," I am desired by the Directors of this Company to request that you will be pleased to convey to me the opinion of the Lords of the Committee of Privy Council for Trade whether the enactment in question does not in fact repeal and render nugatory the provision contained in a former Act for the making the Great Western Railway, (viz., 5 and 6 Will. IV., c. 107,) wherein, under clause 105, it was required "that the gates should be maintained and kept shut across the railway, at the point where it should cross any public highway."

As it is intended to bring this question to issue by a summons before the magistrates, upon a complaint made against a servant of the Company for not keeping gates shut across the line of railway, I am directed also to request that you would inform me whether their Lordships coincide in opinion with them that the public safety would be endangered by any attempt to keep gates so shut across the railway, instead of being closed across the highway, as provided for in the 2 and 3 Vic., c. 45, which, I apprehend, would of itself be deemed sufficient evidence to prove the intention of the legislature to dispense with the special provision in the former Local Act, as being quite inconsistent with the more recent enactment in the General Bill relating to highways.

I have, &c.,

CHARLES A. SAUNDERS, Secretary.

S. Laing, Esq.,
&c. &c.

LETTER sent to the Great Western Railway Company, in reply to their Letter of the 4th December, relative to Shutting Gates at Level Crossings.

SIR,

Board of Trade, December 6, 1841.

IN reply to your Letter of the 4th December, requesting to be informed of the construction which the Lords, &c., put upon the General Highway Act, 2 and 3 Vic., c. 45, and whether their Lordships coincide in opinion with the Directors of the Great Western Railway Company that the public safety would be endangered by any attempt to keep the gates at level crossings shut across the railway instead of across the highway, I am directed, &c., to inform you that their Lordships entertain no doubt that the practice of keeping gates shut across the railway is much more dangerous than that prescribed by the Act 2 and 3 Vic., of keeping the gates closed across the highway, and that this opinion has been strengthened by the recent occurrence of several fatal accidents in consequence of the former practice being adopted. Their Lordships also entertain no doubt that the 2 and 3 Vic., c. 45, was intended by the legislature to supersede the provisions of any Local Acts inconsistent with it, and to make it incumbent on all Railway Companies to adopt the course which experience has shown to be most conducive to the public safety.

I am, &c.,

S. LAING.

To the Secretary of the Great Western
Railway Company.

Note.—The magistrates before whom the case was brought decided in conformity with the view taken by the Board of Trade.

No. 41.

DUNDEE AND NEWTYLE RAILWAY.

No. 41.
Dundee and
Newtyle.

SIR,

Dundee, October 18, 1841.

YOUR letter to the Secretary of the Dundee and Newtyle Railway Company was duly received.

I beg to send herewith answers by the Managers of that railway to the queries regarding the crossing of public roads by that railway. I would, in addition to these answers, say that the roads referred to, on the crossings of which there are no gates, are very seldom used by the public, and never, from the time the railway was opened, has there been any interruption to the free passage of these roads, or any accident at these crossings.

I have, &c.

JOHN KERR,
Clerk to the Railway Company.G. R. Porter, Esq.,
&c. &c.

RETURNS from the Dundee and Newtyle Railway Company, made in accordance with Instructions received from the Board of Trade, dated September 28, 1841.

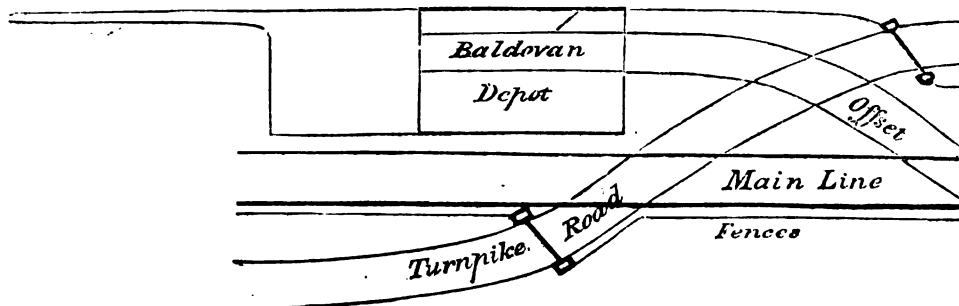
Dundee and Newtyle Railway Office,
Dundee, October 15, 1841.

1. How many turnpike-roads and highways are crossed on a level by the Dundee and Newtyle Railway?—There is only one turnpike-road and seven parish roads crossed on a level by this railway.

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Level Crossings.No. 41.
Dundee and
Newtyle.

2. Are good and sufficient gates erected across each end of such turnpikes or highways at each of such crossings, in conformity with the 2 and 3 Vic., c. 45?—The railway crosses the turnpike-road twice; and at one of the places, that is, where it is crossed by the railway close to Baldoran Depôt, good and sufficient iron gates are erected in conformity with the said Act; but no gates are erected across any of the other roads crossed by this railway.
3. Are gatekeepers stationed at each of such crossings in conformity with the said Act?—A gatekeeper is stationed at the gates of Baldoran Depôt.
4. What wages do such gatekeepers receive? How many hours do they remain on duty? Have they any other employment?—He receives 11s. per week, is 12 hours on duty, and it is also his business to attend Baldoran Depôt.



5. Are positive instructions given to such gatekeepers to keep such gates constantly shut across the roads, unless when opened by the gatekeeper to allow carriages, &c., to cross the railway?—It will be seen from the sketch that, owing to the offsets running into the depôt, the gates cannot be made to fold across the railway, and they are made to fold across each end of the turnpike only; and positive written instructions are given to the gatekeeper to close the gates across each end of the turnpike when the train is within a mile of the station, and not to open them again until the train has passed.

6. What other instructions are given to such gatekeepers?—He is also instructed to hoist a ball half-mast high whenever a train is in sight, as a warning to carters and others that a train is approaching; and to hoist it to the top of the mast as a signal to the engine-driver when the train is required to stop at Baldoran for passengers.

7. What instructions are given to engine-drivers as to precautions to be observed on approaching crossings?—The printed instructions given to the engine-drivers are as follows:—

“Never to allow his engine to exceed the speed directed by the Company’s manager or engineer.

“In crossing roads, the speed of the locomotive engine to be slackened, especially when any coaches, carts, or other carriages are seen travelling on such roads; and, on coming near the same, to make such signal (a whistle) as shall be appointed by the Company’s manager, and to keep a good look-out; and in all cases not to cross such road whilst any coach or gig is crossing the railway.

“To avoid as much as possible letting off steam near any public roads; and should any horse or horses take fright at the engine or waggons when passing, to render immediate assistance.”

RICH. BAIRD, Manager.

LETTER sent to the Dundee and Newtyle Railway Company in reply to their Letter of the 18th October relative to the Gates at Level Crossings, &c.

SIR,

Board of Trade, November 9, 1841.

• WITH reference to your return, dated 18th October, to the circular from this department relative to level crossings, I am directed, &c., to inform you that the Act 2 and 3 Vic., c. 45, is imperative in requiring gates to be erected across each end of the road at every level crossing of parish roads; and as the Dundee and Newtyle Railway is traversed by several trains every day running at a considerable velocity, the precaution of erecting gates appears highly necessary. Their Lordships, therefore, feel it their duty to recommend a compliance with the Act by the erection of gates at each of the seven parish roads referred to in the return.

The Act further provides that the Company shall employ proper persons to open and shut such gates; but as the roads are, as you state, very seldom used by the public, it may not be necessary to station a gatekeeper constantly at each crossing. In order to enable their Lordships to form an opinion on this point, they will be glad to be furnished with a tracing of the railway on a county map, showing the level crossings and stations, and with any data which you may possess calculated to throw light on the actual amount of traffic on each of the parish roads in question.

I am, &c.

S. LAING.

To the Secretary of the Dundee and Newtyle
Railway Company.

No. 42.

NEWCASTLE-UPON-TYNE AND CARLISLE RAILWAY.

SIR,

Newcastle-upon-Tyne, October 12, 1841.

I ENCLOSE you answers to the queries contained in your letter of the 28th September last, and which show what has been the practice up to this time on the Newcastle and Carlisle Railway, and hitherto without accidents having occurred from such practice. But as the Lords of the Committee of Privy Council for Trade consider it indispensable that the provisions of the Act of 2 and 3 Vic., c. 45, should be complied with, the Directors now give an assurance that it shall be carried into effect, and that all trains travelling after dark shall be provided with red tail-lamps.

S. Laing, Esq.,
&c. &c.

I have, &c.,
JOHN ADAMSON, Secretary.

Appendix.

IV.

Returns relating to Level Crossings.

No. 42.

Newcastle-upon-Tyne and Carlisle.

RETURNS to the Questions sent by the Railway Department, Board of Trade, September 28, 1841.

1. Between Newcastle and Carlisle the railway crosses on the level of roads as follows :—

5 turnpike-roads.

17 townships-roads.

6 ditto but used almost solely as footpaths and occupation-roads.

28 Total between Newcastle and Carlisle Stations for passengers.

Two township-roads between the Carlisle Station and the canal basin not travelled over by passenger-trains. One joint-stocks company's road not travelled over by the trains between Newcastle and Carlisle, but crossed by a branch of the Newcastle and Carlisle Railway between Blaydon to Redheugh and Gateshead.

2. Good gates are erected at each of such turnpikes and highways, but not in all cases, in conformity with the 2 and 3 Vic., c. 45. The said Act having been passed since the making of the railway, in the cases of exception the gates are erected across the railway, and the road passage left clear for the public, excepting at the approach of the trains, of which the persons in attendance on the gates give notice to any drivers or foot-passengers coming up to, or being near, the crossings; and the gates being partially on the road, though not completely closing it, indicates the approach of a train in addition to the gatekeeper's notice. There is no coach or public conveyance for passengers running on any of the roads which cross the railway on the level between Newcastle and Carlisle, the traffic on such roads being now merely local, and very small.

3. Gatekeepers are stationed at each of the crossings above enumerated.

4. The wages of the gatekeepers average about 13s. per week. The gatekeepers remain on duty various hours; for instance, as the trains leave Newcastle and Carlisle at the same hours morning and evening, the gatekeepers near each end are wanted both sooner and later than those nearer the middle, so that those near the ends attend from half-past 5 A.M. to half-past 8 P.M. Those at or near the stations are relieved by changing, or being assisted by men in the stations. There are only two trains on Sundays; the morning trains do not start before 9 o'clock. The men have no other employment.

5. Instructions are given to the gatekeepers to keep the gates shut, excepting when necessary to be open for the passage on the road or railway.

6. The gatekeepers are strictly enjoined to warn all persons coming up to, or being near, the crossings at the approach of the trains, which, as they can be heard, and in most cases are seen, at a considerable distance, he has plenty of time to do; and he is dismissed if ever known to leave his crossing until the passing of the last train. If extra trains are coming he receives notice. Should he require assistance at any time, the numerous workmen on the line are required to lend their aid when hailed or sent for by him, and to perform his duty if necessary for him to leave.

7. The enginemen are required to whistle and to keep a good look-out on approaching the crossings, and to stop or slacken as occasion, or as the signals from the gatekeepers may seem to require.

V.—OPENING OF NEW LINES.

Appendix.

V.

Reports relating to
the Opening of
New Lines.

No. 1.
Manchester and
Leeds.

No. 1.

MANCHESTER AND LEEDS RAILWAY.

9, Brown Street, Manchester,
February 4, 1840.

MY LORDS,

IN reference to a notice given by the Manchester and Leeds Railway Company on the 18th of November last, (of their intention to open to the public on the 21st December then following, a portion of the railway extending from Hebden Bridge to Littleborough) the Directors of the Railway Company beg leave to inform your Lordships that the part not then opened, will be ready to be opened on the 22nd February instant, for the purposes specified in the notice.

It is the desire of the Directors of the Railway Company, that your Lordships' inspector should have the fullest opportunity afforded to examine the works and to make a satisfactory report thereon, and information will be given to your Lordships of the earliest day when the works will be ready for his examination. Presuming that the examination may take place prior to the 22nd of February instant, the Directors propose to open to the public the portion of railway above mentioned, or at all events they intend to do so as soon after that day as practicable.

I am, &c.,
J. B. BRACKENBURY.

To the Right Honourable the Lords of the Committee
of Her Majesty's Privy Council for Trade.

LETTER sent to Secretary of Manchester and Leeds Railway Company, in reply to Letter of 4th February, relative to the opening of part of the Line.

SIR,

Board of Trade, February 5, 1841.

IN reply to your letter of the 4th February, stating the intention of the Manchester and Leeds Railway Company to open the remaining portion of their railway on the 22nd instant, I am directed, &c., to say that, as the intention of opening the portion in question under the previous notice of the 18th November, was completely abandoned, a new notice of not less than one calendar month would appear to be required under the Act for regulating railways. Their Lordships, however, are not disposed to deprive the public and the Company of the benefit of an early opening upon an objection of form, and they direct me to say that, provided a notice of not less than seven days, of the day when the portion of the railway in question will be actually completed and ready for inspection, is given, they will waive the objection above stated, and not object to the opening of the line, in the event of a favourable report from Sir F. Smith as to its sufficiency, with a view to the public safety.

I am, &c.,
S. LAING.

To the Secretary of the Manchester and Leeds
Railway Company.

THE Report of Lieutenant-Colonel Sir Frederic Smith on the Summit Tunnel of the Manchester and Leeds Railway, which it is proposed to open to the Public on the 1st of March.

MY LORDS,

York, February 23, 1841.

AGREEABLY to your Lordships' instructions, I have this day examined the Summit Tunnel of the Manchester and Leeds Railway, which is the only portion of that important line that is not open to the public traffic. In this inspection I was accompanied by Mr. Houldsworth, the chairman of the Company, Captain Laws, the superintendent, Mr. Gill, the managing director, and Mr. Gooch, the engineer.

In my report on this line, dated the 23rd December last, I stated that there were 10 miles remaining to be opened, consisting of three distinct but continuous portions. viz., from Hebden Bridge to the eastern end of the Summit Tunnel, being a length of about six miles and seven furlongs; second, the Summit Tunnel of about one mile and five furlongs, and thirdly, a portion connecting the station at Littleborough with the west end of the tunnel, being a length of about one mile and four furlongs.

I reported that the portion between Hebden Bridge and the Summit Tunnel might be opened to the public on the day then proposed by the Directors, viz. the 28th December last, provided your Lordships received from the engineer or secretary of the Company, a certificate that

all the deficiencies and defects I had pointed out to the former, and brought under your Lordship's notice, had been supplied and rectified. Your Lordships received this certificate, and the part of the line alluded to was opened at the time proposed.

I stated also in my report of the 23rd December, that the portion of the line between Littleborough and the Summit Tunnel was only intended to be opened at that period for goods, and that I was of opinion that the said tunnel would not be ready for a final inspection under two months, as the work that appeared to be necessary for its security could not be completed in a shorter period.

I have now to acquaint your Lordships that that part of the line which extends from Littleborough to the tunnel will be in a fit state for the public traffic in passengers by Monday next the 1st of March, the day on which the Directors are desirous of opening the whole of the line; but although it *may* be practicable, I do not feel equally certain that the engineer will be enabled by that time to complete the works that still remain to be executed in the tunnel.

I should inform your Lordships that in the middle of the month of December last, it was the opinion of the engineer that the tunnel might have been opened at the beginning of this year, together with the two portions of the railway in connexion with it, but a sudden failure was shortly afterwards observed in the arch and side walls of that part which lies between the second and third shafts, near the west end of the tunnel. It was discovered that this failure arose from an insufficiency of thickness in the invert, and in consequence a length of about 120 yards of the original invert has been taken out, a new and much stronger invert has been substituted, the footings of the side walls have been widened, and, in some parts, the brickwork of the side walls has been removed and replaced by stonework of greater thickness.

The chairman of the Company informed me that the orders of the Directors to the engineer were to spare no expense, and to consider himself neither limited as to money or time to make the work perfectly secure. Mr. Gooch admitted that this full latitude had been given to him, and therefore it is fair to presume that an engineer, possessing the skill of this gentleman, has omitted no precaution to attain the object desired by his employers.

It would be unreasonable to suppose that a Government officer, on the mere inspection of a work of this character, in the state in which I have seen it, could take upon him any part of the responsibility of opening it for the public traffic. The engineer who has watched its progress from day to day, and whose reputation depends upon its stability, is the only person who should be required to stand in this critical position. It can only be expected that I should lay before your Lordships any point in which I have a doubt, or where additional precautions are called for. We have seen that until within a very few days of the failure which I have described, this tunnel was supposed by the engineer, sub-engineers, and other officers of the Company, who had been engaged in its construction, to be free from any important defect; and, therefore, no one unacquainted with all the details of the nature of the soil through which the tunnel was pierced, the springs that had obstructed the progress of the workmen, and the various thicknesses of the pier walls and arches, could be competent to form a sound or useful opinion as to the stability of the work. This must rest on the judgment of the executive engineer, and as Mr. Gooch is ready to pledge his professional reputation on that point, I think we shall do well to rely on this, and I shall confine myself to some few remarks as to the present state of completion of the work, and shall touch on some precautionary measures which I would recommend to be adopted.

The whole of the tunnel is now laid with the permanent way, excepting about 250 yards. Here the ballasting is incomplete, and neither the rails nor sleepers are fixed. For about 150 yards of this distance the centre drain is not formed. These are the chief works remaining to be done, and although it is somewhat doubtful whether they can be entirely finished by the 1st of March, yet as I do not question the practicability of accomplishing the whole by the 3rd or 4th of the month, I cannot help regretting that the Directors had not fixed a later day for their opening than the 1st. But this having been done, a postponement would not only be a considerable disappointment to them, but also to the companies who have undertaken to forward the Manchester passengers from Normanton to York and Hull, and also to Derby, the Midland Counties, and London. Under these circumstances although the line is not in a condition to enable me to state positively whether it will be fit to be opened throughout on the 1st, yet I am sure your Lordships are desirous of affording every facility for the operations of the railway companies, and I would therefore suggest that if the engineer or secretary of the Manchester and Leeds Company should certify to your Lordships, on or before Saturday next, that the line is either then, or will be by the 1st of March, perfectly fit for the traffic of passengers, leave might be given, on such assurance, for the thorough opening of this railway.

However, your Lordships will perceive, in this instance, an additional reason to those which have already come to your knowledge of the necessity of every line being finished *before* it is inspected.

In one part of this tunnel large beams extend across from one side wall to the other, for the purpose of preventing their lateral movement. They were placed in this manner when the original inverts were removing. I do not believe there is much, if any, pressure upon them, but on their being taken away the walls should be closely watched, to discover if there is any thrust upon them.

The length of new invert is about 110 yards, and Mr. Gooch tells me that he measured the width of the tunnel in this part, at various heights, in no less than 250 different places. These measurements have been regularly tried at intervals of seven or eight days from December last, and no change has been observable of late excepting in three places. In one of these the side walls have moved within the last 10 days about an inch nearer to each other, but this was before the finishing of the new invert. This work was closed on Saturday last, and no change has since become apparent. I would submit that Mr. Gooch be requested to state in

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Reports relating to the Opening of New Lines.

No. 1.

Manchester and Leeds.

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No. 1.
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his report of Friday or Saturday, whether at the point in question any further movement has taken place, and if so, he should be further required to send during the month of March a weekly statement, specifying whether any change in the condition of this tunnel is perceptible.

The water penetrates in a considerable quantity through various parts of the arch. This was unavoidable, but Mr. Gooch is adopting ingenious modes for preventing this defect proving any inconvenience to the passengers.

I observed in my inspection many points of arrangement on the Manchester and Leeds Railway worthy of imitation, which, at a proper time, I shall have the honour of bringing under your Lordships' notice.

I cannot conclude without stating that the gentlemen who accompanied me afforded every facility that I required in the performance of my duty.

I have, &c.,
FREDERIC SMITH, Lt.-Col. R. E.
Inspector-General of Railways.

To the Lords of the Committee of Privy Council
for Trade.

LETTER sent to the Manchester and Leeds Railway Company, with Copy of Sir Frederic Smith's Report on the Summit Tunnel.

SIR,

February 25, 1841.

I AM directed by the Lords, &c., to enclose a copy of Lieutenant-Colonel Sir Frederic Smith's report on the portion of the Manchester and Leeds Railway which it is proposed to open on the 1st of March. Their Lordships direct me to say that, under the circumstances therein stated, the responsibility of not opening the tunnel until the works are fully completed must rest entirely with the Company and their engineer, and their Lordships will not object to the opening taking place at the time proposed, provided a certificate signed by Captain Gooch has been previously transmitted to them, stating that the works remaining unfinished at the date of Sir F. Smith's inspection have been fully completed, that the tunnel is perfectly secure, and that he is satisfied that no danger can be reasonably apprehended from opening the line. Their Lordships trust that the Directors will not, under any circumstances, open the line until Captain Gooch is able to give such a certificate; and from the very proper instructions given to that officer, to consider neither time nor expense when the public safety was concerned, they feel assured that they may rely on this requisition being complied with.

I am further directed to request that Captain Gooch may be instructed to transmit periodical measurements of the tunnel, in accordance with the suggestion contained in Sir F. Smith's report.

The Secretary of the Manchester and Leeds
Railway Company.

I am, &c.
S. LAING.

COPY of the Engineer's Report to the Directors, on that portion of the Line to be Opened on the 1st March.

GENTLEMEN,

Engineers' Office, Manchester, February 27, 1841.

I HAVE now the pleasure to report that the works on the portion of your line not yet opened, and which were unfinished at the date of Sir Frederic Smith's inspection, are completed, including both lines of railway; and I have no hesitation in stating that it may be travelled in perfect safety by the public.

The request of the Board of Trade, as to the periodical measurement, shall be attended to, and forwarded to Sir F. Smith.

I am, &c.,
THOMAS L. GOOCH.

I certify the above to be a true copy,

The Directors of the Manchester and Leeds
Railway Company.

JOHN JELlicORSE, Secretary.

No. 2.
Taff Vale.

No. 2.

TAFF VALE RAILWAY.

STATING that the Line, from the Navigation-House, in the Parish of Lanwonno, to the Town of Merthyr Tydvil, will be opened for Public Traffic on the 12th April, 1841.

MY LORDS,

IN pursuance of an Act passed in the 3d and 4th years of the reign of Her present Majesty, intituled "An Act for regulating Railways," c. 97, I hereby give you notice that on the 12th day of April, 1841, the Directors of the Taff Vale Railway Company will proceed

to open, for the public conveyance of passengers and goods, so much of the said railway as extends from the Navigation-House, in the parish of Lanwonno, to the town of Merthyr Tydvil, which said portion will complete the communication between the towns of Cardiff and Merthyr Tydvil.

To the Right Honourable the Lords Commissioners
of Her Majesty's Privy Council for Trade.

I have, &c.
JOSEPH BALL, Secretary.

Appendix.
V.
Reports relating to
the Opening of
New Lines.
No. 2.
Taff Vale.

THE REPORT of Lieut.-Colonel Sir Frederick Smith on the Taff Vale Railway.

SIR, Cardiff, April 20, 1841.

I HAVE the honour to acquaint you that I have this day completed the examination I was required to make of the Taff Vale Railway, preparatory to its being opened for the public traffic, from the Navigation-House to Merthyr Tydvil, and I have now to submit the following report on the whole line :—

The Acts of Parliament, in pursuance of which this railway has been formed, were passed in the years 1836, 1837, and 1840. The works were commenced in October, 1836, and on the 8th of October, 1840, the first portion of the line was opened, viz., from Cardiff to the Navigation-House, in the parish of Llanwynns, being a distance of 16 miles.

The part now proposed to be opened, and to which my attention has been more particularly directed, is about eight miles in length, and extends from the said Navigation House to the Northern Terminus of this railway at Merthyr Tydvil.

The Southern Terminus may be said to be at Cardiff, as the passengers are not conveyed beyond the station at that place, although the line has been prolonged for about a mile further for the conveyance of goods to and from the depôt of the Glamorganshire Canal and the docks now forming by the Marquis of Bute.

The stations for passengers are as follows :—

- 1st. The Cardiff Station.
- 2d. The Llandaff Station, at about three miles from the Cardiff Station.
- 3d. The Pentyrch Station, at about five miles from the Cardiff Station.

Between the two last stations there will be the junction of the branch to the mouth of the river Ely, which will be six miles in length, and for which the land has been secured and fenced in.

- 4th. The Taffs Well Station, at about seven miles from Cardiff.

5th. The New Bridge Station, at about 12 miles from Cardiff; and here another branch is forming, which will run up the vale of the Rhondda. Its length will be about two miles, and it is expected to be completed in a month from this time.

- 6th. The Navigation-House Station, at about 15½ miles from the Cardiff Station.

And, lastly, the Merthyr Tydvil Terminus.

Between the two last stations there will be the junction of the Llancaik Branch. This branch, which is nearly completed, will be three miles and a-half in length.

There are other branches which, like those already mentioned, will bring minerals to the main line; they are nearly finished, and will altogether be about three miles in extent.

At the Two-passenger Termini ample accommodation, it is understood, will be provided; and at the intermediate stations there are, at present, sheds which are, perhaps, under all the circumstances of the probable traffic, as convenient as the passengers can reasonably expect.

The gradients of this line are as under stated, commencing from the southern extremity, near the Marquis of Bute's docks :—

	Yards.
Horizontal	550
Rising 1 in 176	396
Ditto 1 in 264	440
Ditto 1 in 660	3520
Ditto 1 in 180	660
Horizontal	836
Rising 1 in 330	1320
Horizontal	1210
Rising 1 in 240	2838
Ditto 1 in 264	2068
Ditto 1 in 264	836
Ditto 1 in 440	880
Ditto 1 in 264	2640
Ditto 1 in 264	2728
Ditto 1 in 264	880
Ditto 1 in 704	1716
Ditto 1 in 440	858
Ditto 1 in 264	1540
Ditto 1 in 880	924

Here an inclined plane has been formed, to be worked by a stationary engine of fifty-horse power; and this is the only part of this railway (excepting sidings) which has a double line of rails. But the necessary quantity of land has been secured, and all the bridges over the railway have been built for a double line.

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Reports relating to
the Opening of
New Lines.No. 2.
Taff Vale.

The length of the inclined plane is about 880 yards, and it is subdivided into two slopes, the first being 440 yards, rising 1 in 20½; and the upper slope 440 yards, rising 1 in 18.

The remainder of the gradients are as follows:—

	Yards.
Rising 1 in 370	176
Ditto 1 in 314	1518
Ditto 1 in 370	2618
Ditto 1 in 754	1056
Ditto 1 in 621	1760
Ditto 1 in 459	1518
Ditto 1 in 293	352
Ditto 1 in 220	374
Ditto 1 in 203	1100
Ditto 1 in 176	2096
Horizontal	176

It will be perceived that (with the exception of a few horizontal planes) the line rises the whole way from Cardiff to Merthyr Tydvil, which is an advantage, inasmuch as almost all the heavy traffic will be in minerals, and will descend from the latter to the former place.

In order to construct this railway with the degree of economy which the circumstances of the case are understood to have demanded, the engineer, Mr. Bush, was obliged to skirt the sides of the valley so as to avoid repeated crossings of the river Taff by viaducts, and also to save the formation of some lofty embankments. In adopting this course he has apparently been driven to the necessity of laying out his line with several curves of unusually short radius; but in doing this he has evinced much engineering skill, and has, where most required, erected parapets for the better protection of the traveller, in the event of the engine or carriages getting off the line.

I would, however, propose that a suggestion should be offered to the Directors of the Taff Vale Railway, recommending them to call upon the engineer to fix the maximum rate of speed to be used round such of the several curves as have a shorter radius than half a mile.

The following list of the most severe curves will show the necessity of attention being given to this important precaution for the public safety:—

	Mls. Chains.			
Length	0	26	curve 10	chains radius.
Ditto	0	7	ditto 11	ditto.
Ditto	0	18	ditto 12	ditto.
Ditto	0	7	ditto 7	ditto.
Ditto	2	41	ditto 15	ditto.
Ditto	2	22	ditto 20	ditto.
Ditto	2	13	ditto 22	ditto.
Ditto	0	29	ditto 25	ditto.
Ditto	0	37	ditto 26	ditto.
Ditto	0	21	ditto 28	ditto.
Ditto	1	8	ditto 30	ditto.
Ditto	1	5	ditto 40	ditto.
Ditto	0	20	ditto 60	ditto.
Ditto	1	40	ditto 80	ditto.

This line, from its tortuous course, presents a new feature in the railway system; and it would be very desirable that the engineer should narrowly watch its working for some time, for as curves of the severe character adopted here have been deemed unsafe at high velocities, and as this line has hitherto been worked, as I am informed, without accident, it becomes a question whether there is really any inherent danger in such curves, or whether the safety in this case is attributable to the great care of the engine-drivers, or to the extraordinary precision with which the rails appear to have been laid.

This railway has a gauge of 4 feet 8½ inches; and the rails, which are only 55 lbs. per lineal yard, rest on chairs secured to transverse sleepers by means of bolts passing through the chairs and sleepers, and kept firm by nuts and washers on the under side.

The present establishment of servants consists of 13 porters, of whom 4 are boys.

- 24 policemen.
- 2 conductors, who have the charge of the trains on the journey.
- 2 breaksmen.
- 1 foreman of the locomotive department.
- 3 engine-drivers.
- 3 firemen; and
- 4 engine-cleaners.

There are also to be two enginemen for the stationary engine, and a bank-rider to break the carriages down the inclined plane. This establishment appears to be ample for working the line in the manner now intended.

Three trains for passengers are to travel daily in both directions.

The first train is to leave Cardiff at 8 A.M., and on arriving at the foot of the plane it will stop; the engine will be detached, and remain there to take back the down train, which, by starting from Merthyr at 20 minutes after 8, will reach the top of the plane at about the time the train from Cardiff will arrive at the bottom. The second train starts at 11 from Cardiff, and 20 minutes after 11 from Merthyr; and the third at 3 from Cardiff, and 20 minutes after 3 from Merthyr.

The first and last trains carry first and second class passengers only; and the middle train carries three classes of passengers and goods, the latter being placed on the hinder part of the train.

The trains will pass each other on the double line on the inclined plane, and will be taken forward to their respective destinations by the engines which will have brought the other trains to the plane.

According to this system, no collision can result from there only being a single line, as there will be a three-hours' interval between the first and second, and four hours between the second and the third and last trains.

The mineral traffic will, I understand, be kept clear of the passenger-trains by starting generally after the last train in the afternoon.

With these precautions and arrangements I trust that this line may be worked with safety.

There is on this line one level crossing of a tramroad, and another of a public road, and at each gates have been put up and a policeman is stationed.

It is gratifying to be able to state that this railway is in all respects in better order than any other which I have inspected preparatory to its opening, and I consider it fit for the public traffic in passengers and goods.

The embankments appear to be consolidated, the cuttings properly trimmed, the fences in good order, the permanent way well laid and properly ballasted, and the carriages of a substantial construction and well provided with breaks.

The first and second-class carriages have buffer-springs, and the third-class carriages have common padded buffers.

The engines have six wheels, four of which are coupled, and, having been made by Hawthorne, and Sharpe, Roberts, and Company, there is every reason to expect that they will be found well suited for this line. Indeed they have now been at work upon it for the last six months, and it does not appear that any difficulty is experienced in working them round the curves at a velocity of upwards of 20 miles an hour.

The laying of the rails at the curves has been managed with mathematical nicety, so as to keep the outer rail of the curve duly raised above the level of the inner rail. So long as the engineer who constructed this line continues to manage it, this precision of the rails will doubtless be maintained; but should any circumstance remove this gentleman from his present employment, it would be right that his successor, if not an engineer, should be properly instructed by him as to the mode he has adopted in laying the rails, so that they may be restored to their present relative position when any general lift of the line may take place.

I enclose a copy of the existing regulations for the working of this railway, which, however well calculated they may have been for the traffic hitherto carried on, are obviously insufficient for the traffic which may be expected, and a code entering into more minute details of the duties required from the servants of the Company seems to be called for; and its compilation cannot, in my opinion, be in better hands than those of the engineer of the line who has devoted much of his time and talent to the consideration of its requirements.

I have only to add that I have signified to the Secretary of the Company that I am not aware of any objection to the opening of the remainder of this railway from the Navigation-House to Merthyr Tydvil to-morrow, as proposed by the Directors.

I have, &c.

FREDERIC SMITH, Lt.-Col. R.E.,
Inspector-General of Railways.

Right Hon. Henry Labouchere, M.P.,
&c. &c. &c.

LETTER sent to the Taff Vale Railway Company, with Copy of Sir Frederic Smith's Report, &c.

SIR,

Board of Trade, April 24, 1841.

I AM directed, &c., to enclose a copy of Sir F. Smith's report on the Taff Vale Railway, which their Lordships are glad to find is so satisfactory with regard to the completion of the works and the arrangements for opening. It only remains to request that you will draw the particular attention of the Directors to that part of the report which points out the desirableness of laying down some precise rule as to the limitation of speed on going round the numerous curves of short radius, and also to the recommendation that no time should be lost in drawing up a more detailed code of instructions for servants in concert with the engineer of the Company.

Joseph Ball, Esq., Cardiff,
&c. &c. &c.

I am, &c.,
S. LAING.

No. 3.

GREAT WESTERN RAILWAY.

GIVING notice of the intended opening of the Line from Wootton-Basset Road to Chippenham on the 22nd May.

SIR,

Princes-street, Bank, April 22, 1841.

I AM desired by the Directors of this railway to acquaint you, for the information of the Lords of the Committee of Her Majesty's Privy Council appointed for Trade, that it is

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V.

Reports relating to
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New Lines.

No. 3.
Great Western.

intended to open a further portion of this line for the public conveyance of passengers and goods between Wootton-Basset road Station and Chippenham after the expiration of one calendar month from this date.

The portion of line in question is about 13 miles in length, and extends to a spot on the east side of Chippenham town.

I have the honour to request that you will acknowledge the receipt of this notice, which is given in compliance with the provisions of the Act of 3 and 4 Vic., cap. 97, entitled "an Act for regulating Railways."

S. Laing, Esq.
&c. &c.

I have, &c.
CHARLES SAUNDERS, Secretary.

GIVING notice of the intended opening of the Line from Bristol to Bridgewater on the 24th May.

Bristol and Exeter Railway Office, 30, Broad-street,
Bristol, April 24, 1841.

SIR,

I AM desired by the Directors to acquaint you, for the information of the Lords of the Committee of Her Majesty's Privy Council appointed for Trade, in compliance with the enactment of Lord Seymour's Bill for regulating railways, that it is intended to open the Bristol and Exeter Railway from Bristol to Bridgewater for the public conveyance of passengers and goods, after the expiration of one calendar month from this date.

I am to request that you will have the goodness to acknowledge the receipt of this notice.

S. Laing, Esq.
&c. &c.

I have, &c.
J. B. BADHAM, Secretary.

REPORT of Lieutenant-Colonel Sir Frederic Smith on the Great Western, the Cheltenham and Great Western Union, and the Bristol and Exeter Railways.

SIR,

Board of Trade, Whitehall, June 1, 1841.

IN my letter of the 24th May I acquainted you that I had inspected that portion of the Great Western Railway which extends from Wootton-Basset road to Chippenham, that portion of the Cheltenham and Great Western Union Railway which connects Cirencester with Swindon, and that I had also inspected the Bristol and Exeter Railway as far as Bridgewater, and I apprised you that as I did not find either of those lines sufficiently complete for the public traffic, I intended to make a further examination of them on the 29th and 31st ultimo.

I transmit a letter from Mr. Saunders, the secretary of the Great Western Company, and superintendent of that line, as well as of the Cheltenham Union and Bristol and Exeter Railways, in which that gentleman states that the observations contained in the letter which I addressed to him on the 24th ultimo had been laid before the Directors, who had made them known to Mr. Brunel, the engineer of the lines, in order that he might devote his best attention to the several points referred to, with a view to their being fully carried into effect before the day appointed for the opening.

I have now the honour to state to you that I have made these inspections, and I enclose for your information a copy of the letters which I have written to Mr. Saunders, authorising the opening of those parts of the Great Western, and of the Cheltenham and Great Western Union Railways, which were under consideration, and specifying what works it would be necessary to perform on the Bristol and Exeter line before it could be used by the public.

Mr. Saunders transmitted to me the accompanying copies of regulations originally issued solely for the guidance of persons employed in the Great Western Railway, but now intended to apply also to the Cheltenham and Great Western Union as well as to the Bristol and Exeter line. They consist of—

First. General regulations for the police, comprehending inspectors, sub-inspectors, &c.

Secondly. Instructions to policemen and others for the management and method of giving signals.

Thirdly. A list of signals.

Fourthly. Rules and regulations for engine-men and firemen.

And fifthly. Special instructions to be observed at the termini of the Great Western Railway, and also at Slough and Reading stations.

I may here remark that the Acts passed for the Great Western Railway were—

5 and 6 Wm. IV. c. 107.

6 Wm. IV. c. 38.

1 Vic. c. 91 and 92.

2 Vic. c. 27.

The total length of railway intended to be formed is 118 miles of double line. The works were commenced in the month of November, 1835.

	Miles in length.
The first opening was to Maidenhead on the 4th June, 1838	23
The second opening was to Twyford, 1st July, 1839	7½
The third opening was to Reading, 31st March, 1840	5
The fourth opening was to Steventon, 1st June, 1840	20½
The fifth opening was to Faringdon-road, 15th July, 1840	7
The sixth opening was to Hay-lane, 17th December, 1840	17
<hr/>	
Making a total distance of	80
The length now inspected is	13½
The length from Bath to Bristol, which was opened on the 31st August, 1840	12½
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And there therefore remains a distance of 12 miles still to be opened between Chippenham and Bath, to make up the total length of 118 miles.

In this whole distance the steepest gradient has an inclination of 1 in 100.

There are two planes of this description, one between Hay-lane and Chippenham, and the other in the Box Tunnel, between Chippenham and Bath. The former, which is now more particularly under consideration, is a mile and a quarter in length.

In my inspection I descended this plane with an engine and four light carriages, the steam being shut off and without the necessity of applying the breaks.

The characteristic gradient on this portion of the line is 8 feet a-mile, and of the remainder 4 feet per mile.

In that portion of the line which extends from Hay-lane to Chippenham there are four deep cuttings, the first of the extreme depth of 40 feet, the second of nearly 50 feet, the third of 40 feet, and the fourth of 50 feet.

There are three embankments of the respective extreme heights of 40 feet, of 30 feet, and of 33 feet; and another embankment of the total length of 3½ miles and of an extreme depth of about 20 feet.

Owing to the unfavourable season of the year at which the first two lofty embankments were formed, and owing also to their being composed chiefly of clay, they have slipped to such an extent as to render it necessary to endeavour to secure them by several rows of piles driven through the mass into the natural ground. The performance of this work delayed the opening of the line for some weeks. Considerable subsidence may still be expected, but I trust no danger will arise from this circumstance, as the superintendent of the line, alive to the risk to which passengers would be exposed by any want of vigilance, will, I doubt not, adopt proper precautions, especially in the approaching winter, for the safety of the travellers.

The remainder of the embankments and the cuttings are in good order, and the permanent way of a very satisfactory character.

The fences, with few exceptions, are complete, and the bridges generally of larger dimensions and more convenient than required by the Acts of Parliament. The gates for the level crossings were to be put up on the day appointed for the opening, and the mile-posts were on the ground on the day of my inspection.

The station at Chippenham will afford ample accommodation to the public, but it is not quite complete. The temporary station at Hay-lane is to be abandoned, as soon as the station-house and other buildings, which are now forming at Swindon, shall be completed.

The establishment proposed to be added for the portion of line between Hay-lane and Chippenham appears to be sufficient.

The system of signals on this railway seems well calculated for the safety of the public. The principle adopted is as follows:—

There is placed on a lofty pole a horizontal board, which on being turned full on the line shows a black bar. When this signal is exhibited no train or engine is allowed to approach the station. On the same pole, but on a higher level, a round disc is placed. This disc presents its edge up and down the line when the cross bar is exhibited, and these signals denote that the station must not be entered; but when the disc is visible up and down the line, and the cross-bar turned so as to present its edge, then it is understood that the station is open for any engine or train. Thus the engine-drivers and guards have both a negative and positive signal for their guidance; the exhibition of the cross-bar and the non-exhibition of the disc signifying that they are not to approach; and on the other hand, when the disc is visible and the cross-bar is not seen, the station is considered to be clear.

As these signals differ so essentially from those in use upon other lines, and appear so well calculated for the object in view, I have thought it right to bring them under your special notice.

At each station there are also two flags. The red one is used to denote that another engine or train is not more than three minutes a-head, and the green flag is intended to signify that another engine or train has passed within ten minutes.

The night signals are upon the same principle as those in use by day.

With reference to this railway I have only to add, that I am not aware that the Acts of Parliament have been deviated from in any essential points, or in any manner prejudicial to the public.

Appendix.

Cheltenham and Great Western Union Railway.

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The Act for this line passed in the year 1836, and the works commenced in 1839. Its total length is 36 miles from the junction with the Great Western at Swindon, to its junction with that portion of the Cheltenham and Great Western Railway which is completed between Gloucester and Cheltenham, and which, from being in connexion with the Gloucester and Birmingham Railway, is worked by that Company.

The works are forming by the Cheltenham and Great Western Union Company, under the direction of Mr. Brunel; and, under an agreement recently entered into, the line, in proportion as it may be finished, will be leased to the Great Western Railway Company.

That part of it which I have inspected is $13\frac{1}{4}$ miles in length, of double line, with a branch of 4 miles of single line to Cirencester.

The gauge of this railway is the same as that of the Great Western, viz. 7 feet; and the bearing is longitudinal and continuous. The weight of the rails varies from 54 to 60 lbs., and they are rolled so as to present a level surface, and thus supercede the necessity of "canting" the timbers.

The characteristic gradient is 16 feet in a mile, and the steepest gradient 17 feet in a mile.

The deepest cutting of that part of the line which I inspected is 40 feet, in clay, to which slopes of two to one have been given.

The highest embankment in the main line is 28 feet, and on the branch 38 feet.

The opening of this railway, like that of the extension of the Great Western from Hay Lane, has been retarded by the slipping of an embankment composed of clay, and formed during very wet weather in the course of the winter before last.

This embankment is near the Swindon junction, and it is a singular fact that the subsidence has even amounted to 8 feet in the course of 24 hours. It now, however, seems to be tolerably firm, and as an immense mass of dry and hard material has been brought to the spot, and, by being thrown on the top, has gradually displaced the treacherous material used in the first instance, there is reason to presume that this work will now remain tolerably firm. It will, however, require careful watching in the course of the approaching winter.

The station at Cirencester will afford sufficient accommodation to the public, as well as the intermediate stations at Minety and Purton, the latter of which is not yet finished.

I am not aware of any deviation from the Act of Parliament of sufficient moment to bring under your notice.

The mile-posts are up, and the fences in good order.

There are two crossings of parish roads on the level, for which suitable gates are to be forthwith provided.

The cuttings and the embankments, with the exception of the slip at Swindon, are in excellent order, and the permanent way only seems to require additional ballast to put it in a good condition.

Mr. Brunel has devoted much attention to the mode of forming the junction at Swindon, which he has arranged with much judgment with a view to the safety of the passengers. I shall avail myself of the opportunity of bringing under your notice the arrangements at this junction, when I lay before you a general Report on the various Junctions and Stations on the several Railways in the Kingdom.

Bristol and Exeter Railway.

The Acts of Parliament under which this Railway are constructing is as follows:—

6th William IV., cap. 26.

1st Victoria, cap. 26.

3rd Victoria, cap. 47.

It will form a junction with the Great Western Railway at Temple Meads, Bristol; and its whole extent will be $76\frac{1}{4}$ miles. The part inspected is $32\frac{1}{4}$ miles in length, and extends from the Bristol Junction to the Bridgwater Station.

In this distance the severest gradient is 1 in 355, and for about $22\frac{1}{4}$ miles the line is nearly level.

I have no reason to believe that either of the Acts of Parliament for this railway have been infringed, but you will perceive by the enclosed letter, dated the 25th May, from Mr. Badham, the secretary of the Bristol and Exeter Company, and its enclosure, dated 21st ult., addressed to him by Mr. Savery, the solicitor of the Company, that there has been a litigation with Mr. Payne respecting a deviation from the Parliamentary line, but that the question has been decided in favour of the Company.

I am as yet unable to lay before you a statement of the out-door establishment proposed to be employed in working the portion of the Bristol and Exeter Railway about to be opened for the public traffic; but you will perceive by the enclosed letter from Mr. Badham, dated 17th ult., that he has given me an assurance that this line will be worked and protected in every point by as effective a force for the purpose as that which has hitherto been employed under similar circumstances upon the Great Western Railway.

The gauge of this railway is the same as that of the Great Western, and the carriages will run through from London, as soon as the line shall be completed between Chippenham and Bath; and the same system of signals will be used on all the lines worked by the Great Western Company.

I found that the whole of the bridges which I measured were of dimensions affording greater accommodation and convenience than was stipulated for by the Acts of Parliament; and I am informed that the Commissioners of Sewers of the various districts through which

the railway has been formed, are satisfied with the way in which the drainage of the land has been provided for.

The stations are as follows; namely, at Nailsea, Yatton, Barwell, Weston-super-Mare, and Highbridge.

It appears to me that the plan adopted in the cases referred to in this Report of combining by means of a lease the arrangements for working, under one system of management and control, branch railways belonging to different companies in connexion with the main line must be attended with considerable advantage and convenience to the public, as well as benefit to the companies themselves in point of economy. It ensures an uniformity of regulation with respect to fares, times of departure, speed of trains, &c., and effectually forbids all conflict of interest or opinion upon many subjects of minor detail, which more or less will affect the convenience and comfort, if not the security of railway travelling.

I have, &c.,

FREDERIC SMITH, Lt.-Col. R. E.,
Inspector-General of Railways,

G. R. Porter, Esq.,
&c. &c.

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V.
Reports relating to
the Opening of
New Lines.

No. 3.
Great Western.

SIR,

London, May 26, 1841.

YOUR letter of the 24th instant having been submitted to the Board of Directors of this Company, I am desirous to convey to you their best thanks for the very prompt communication of those suggestions which, upon an inspection of their line between Hay Lane and Chippenham, have appeared to you to require the more immediate attention of the Company, preparatory to the opening for public traffic, which is intended to take place on Monday the 31st instant. The observations you have been good enough to offer have been already made known to Mr. Brunel, and I am enabled to say that he will devote his best attention to the several points referred to, with a view to their being fully carried into effect before the appointed day.

The Directors have desired me also to express to you that they are very sensible of your kindness in proposing again to go over the line on the 29th instant, when they feel convinced that you will be enabled to report your entire concurrence in the propriety of opening the railway to the public.

I have much pleasure, in compliance with your request, in transmitting to you the copy of the Code of Regulations for working the engines and signals on this railway, which I may add will be equally applicable in every respect to the portions of the Bristol and Exeter, and Cheltenham and Great Western Union Railways, which are about to be worked by this Company.

The present police establishment between Hay Lane station and Chippenham, a distance of about 13 miles, will consist of 28 persons, and the same number will be employed between the Swindon Junction and Cirencester.

I am, &c.,

CHARLES A. SAUNDERS, Secretary.

Lt.-Col. Sir Frederic Smith,
&c. &c.

SIR,

Bristol, May 29, 1841.

I HAVE the honour to acknowledge the receipt of your letter of the 26th instant, in which you inform me that the Board of Directors of the Great Western Railway Company have made known to Mr. Brunel, the suggestions contained in my letter of the 24th instant, respecting certain parts of the lines which I had inspected between Hay Lane and Chippenham, and also between Swindon and Cirencester, and that attention would be paid to carrying into effect before the day of opening, which is intended to take place on the 31st instant.

I have now the honour to inform you that having again examined those parts of the lines in question which were unfinished at the period of my former inspections, I see no reason for a postponement of the proposed opening.

I would, however, point out that there are still some few deficiencies in the fences, and in the gates of the level crossings; that the ballasting is rather scanty in some parts, and that it would be desirable to increase the number of screws in some of the rails; and I would further advise great caution to be used, for at least a few days, in running the trains over the embankments, where partial slips have occurred owing to the wet weather of last winter.

I think it but right to observe that I found the cuttings in a very satisfactory condition, and the permanent way generally in excellent order.

I have, &c.,

FREDERIC SMITH, Lt.-Col. R. E.,
Inspector-General of Railways.

C. A. Saunders, Esq.,
&c. &c.

SIR,

Bristol, May 29, 1841.

I HAVE the honour to acquaint you that I have this day inspected that part of the Bristol and Exeter Railway which extends between Bristol and Bridgewater, and I have pointed out on the spot to Mr. Gravatt, the resident engineer, the works which it will be necessary to complete preparatory to the proposed opening for the public traffic.

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Those parts of the line which are finished I find in excellent order, and the deficiencies to which I allude are in the fences of the line, and of the bridge approaches; in the ballasting, and in the securing of the rails to the timbers, all of which may be completed by proper exertion in about a week.

C. A. Saunders, Esq.,
&c. &c.

I have, &c.,
FREDERIC SMITH, Lt.-Col. R. E.
Inspector-General of Railways.

SPECIAL Instructions to be observed at each Terminus of the Railway, and also at Slough and Reading Stations.

The signals are the same in every respect as those described in the General Instructions.

The cross bar is always to be kept full on by day, and the red light always to be shown after dusk and at night; to close the entrance to those stations until a train or locomotive engine shall come distinctly in sight, and until a bell shall have been rung by the policeman, to give notice thereof at the station.

If the line, and the station, and all the crossings into it shall be perfectly clear, the disc is then to be put full on to the railway, (the cross-bar being reversed so as not to be seen on the line,) and the green light is to be shown to admit the train at a slow speed.

When one disc is shown full at one side or entrance to the Reading or Slough station, the other disc is on no account whatever to be put on full, in the same manner; but the cross-bar and red light must be kept shown, to prevent any engine or train approaching the station in the opposite direction.

As soon as the train has entered the station, and is quite clear of the crossing, and not sooner, the round disc is to be reversed, and the green lamp changed for the red light; the cross-bar being again shown full on to the line.

Particular attention must be paid by the signal men, after ringing the bell, to see that the other signals in the Reading or Slough stations, or at the other end of either station, are so given as to close admittance to it, before the round disc or green lamp is put on to the line, to permit any train or engine to approach.

The up-train must never be allowed to move from the platform of the Reading or Slough station, when the disc or green light is full on to the railway, to admit the down-train; nor must the disc or green light be put full on to the railway, after the whistle of the engine has given notice that the up-train is about to start; nor until it shall have completely cleared the crossing into the north line.

At each terminus the signal man must refuse to admit any engine or train into the station, until he knows that the line in the station is quite clear from the preceding engine, or train of carriages, trucks, or waggons, which it is his duty to ascertain as soon as possible.

By order of the Directors,

CHARLES A. SAUNDERS,
General Superintendent of the Line.

February, 1841.

I, the undersigned, being appointed in the service of the Great Western Railway Company, do hereby bind myself to observe and obey the foregoing regulations.

Date _____

Appointment _____

Witness to Signature.

Signature.

INSTRUCTIONS to Policemen, and Others, for the Management and Method of giving Signals.

EVERY policeman, on the railway, will be furnished with a lamp having three different glasses; viz. red for *Danger*, green for *Caution*, and white for *All right* signals.

The use of each colour is more clearly described in the printed list of signals, and it is of the utmost importance that attention be at all times given to the accurate display of the proper signal according to circumstances, for which purpose each policeman must take care that his lamp is well trimmed and kept clean, and the glasses quite clear and unbroken. In the event of the lamp or glass requiring repair, he is to procure another from the station, to be used until his own be restored to him.

The signals, both by day and night, are to be kept steadily shown by every policeman on the line, until every carriage or truck in the train shall have passed him. In all cases the policeman signalling, is to stand on the opposite side of the railway, that he may be quite conspicuous to the driver and fireman, as well as to the conductor and guards, taking great care not to be in the way of any engine or train approaching in the opposite direction.

At and after dusk, each policeman will show the red light to any train or engine which may be following another train, or carriage, or engine, upon the same line, within three minutes of each other, in order to stop the latter.

After the lapse of three minutes, the green light is to be shown, and to remain until 10 minutes from the time when the first engine or train shall have passed, as a *Caution* signal to the engine-man that another train is a-head of him.

In the day-time the arms are to be used to denote the same signals; the two arms raised over the head, when a train or engine shall have passed within three minutes in the same direction along the line; and one arm raised over the head when it shall have passed more than three minutes but within ten minutes.

Every policeman will give also the proper signal (as described in the list) with his arms by day-light, or with his lamp at dusk or by night, to every passing engine or train. He must inform himself accurately, by inspection of the line or otherwise, that the railway is clear and unobstructed, and that there can be no danger to the free passage of the train, in which case he will communicate, by signal, *All right*, to the engine-man, conductor, and guards.

If there be any obstruction on the line, or any danger of obstruction, or any accident, or if a train or engine shall have passed within three minutes in the same direction, the *Danger* signal *To stop* must be invariably given.

If there be any reason to recommend a reduced speed, on account of the state of the road or rails, or for any other cause whatever; or, if a train or engine shall have passed in the same direction more than three minutes but within ten minutes, the *Caution* signal is to be given.

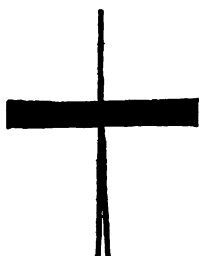
It is the duty of every policeman, as soon as he comes off his beat, to report to the superintendent of the station, any instance of disobedience of the signals given by him, in order that the case may be investigated, and the person, so disobeying signals, may be punished.

In the event of any accident occurring or becoming known to any policeman, he is instantly to show his red light, and to hasten back in the proper direction, to stop any train which may be following on the same line, until he meets with another policeman, to whom he is to communicate the same instruction; or, at all events, until he has proceeded one mile from the place of accident, where he must remain with the *Danger* signal shown, in order to stop the coming trains, until he knows the line to be again perfectly clear and unobstructed.

Station, Tunnel, and Gate Signals.

Signals by means of a round disc, and a cross-bar on a mast, and also by flags in the day-time and lights by night, on a separate flag-staff, are provided at each station, at the entrances to long tunnels, and at all the gates which shut across the line, to be used for the purposes described in the annexed list of signals.

The signal men at the stations and tunnels, and the gate-keepers at the gates, are to employ these signals for the same purposes described in the instructions for the police constables on the line.



The cross-bar seen along the line is the signal *To stop*.

The red flag on the flag-staff by day, and the red light by dusk or at night, is also the *Danger* signal *To stop*, and must be shown in every instance of the line being obstructed, or of any accident or stoppage at the station, in the tunnels, or on the line, and also for three minutes after the passage of any engine or train in the same direction along the line.

The green flag on the flag-staff by day, and the green light at night, is the *Caution* signal *To slacken speed* and must be shown, after three minutes, until ten minutes shall have elapsed from the passing of an engine or train in the same direction, as well as in any case where it may seem proper to recommend a reduced speed.



The disc shown full along the railway, implies "*All right*."

The white light, at night, also implies "*All right*."

The disc must always be reversed (so as not to be seen along the railway), and the cross-bar must be shown whenever the *Danger* signal is indicated upon either flag-staff, whether by red flag or by red light; and consequently the full disc will only be seen when the line is perfectly clear and no engine shall have passed for three minutes previously.

The flag-staff, to show signals for engines or trains on the down-line, is always on the south and left-hand side of the down-train; and for the up-line, is always on the north, and left-hand side of the up-train; but when necessary to give *Caution* or *Danger* signals to the engines in each direction, the flags or lights must of course be shown on both flag-staffs at the same time, as well as by the cross-bar.

In the case of a fog, both the day and night signals must be used simultaneously.

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The local superintendent will be answerable for each police or signal man in his district being thoroughly instructed in the nature and mode of giving these signals; and also for the proper observance of any special orders in reference thereto, which may be given from time to time.

A copy of the instructions and list of signals is to be furnished to every policeman of the Company, to be inspected once a month at least, and a counterpart, signed by each individual, to be kept as evidence of his having been so furnished.

There will be an additional order for the special guidance of signal men, at Slough and Reading stations; and also at each terminus of the railway.

By Order of the Directors,

CHARLES A. SAUNDERS,

General Superintendent of the Line.

February, 1841.

I, the undersigned, being appointed in the service of the Great Western Railway Company, do hereby bind myself to observe and obey the foregoing regulations as to signals.

Date _____

Appointment _____

Witness to Signature.

Signature.

LIST OF SIGNALS.

LINE SIGNALS.

The following signals are shown by every policeman employed on the line of railway:—

DAY SIGNALS.

The day signals are performed by the arms.

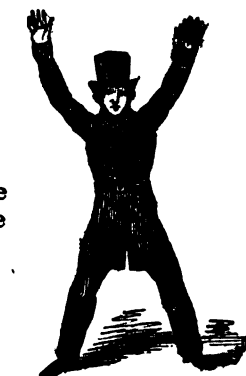
The signal "*all right*," consists in holding the right arm in an horizontal position, pointing *across* the line of rails on which the train is proceeding.



The *caution* signal to "*slacken speed*," is shown by the policeman facing the approaching train; one arm being held straight up as high as he can.



The *danger* signal "*to stop*," is shown by the policeman facing the approaching train, and holding both arms straight up as high as he can.



NIGHT SIGNALS.

"*All right*." On the approach of a train, the *white light* of the lamp is to be held steadily facing it, and as it passes by, the lamp is to be moved round, so that the light may continue to fall upon the engine. Great care must be taken to keep the light steady, in order that it may not be mistaken for any other signal.

The *caution* signal "*to slacken speed*," is indicated in a similar manner, by the *green glass* of the lamp being turned on and shown as before mentioned.

The *danger* signal "*to stop*," is shown in the same way, by the *red glass* of the lamp being turned on.

In the absence of a red light, the violent waiving of a light horizontally indicates danger.

The carriages are provided with red and green lamps; the red ones are placed at the rear of the carriages, and can only be seen by persons standing behind the train.

The green ones are placed in front, they will consequently denote the approach of the train.

Locomotive engines moving without a train will show the same lights.

STATION, TUNNEL, AND GATE SIGNALS.

The following signals are used at every station, at each entrance to the long tunnels, and at level crossings of roads where gates are constructed to shut across the railway:—

DAY SIGNALS.

The signal "*all right*," is indicated by the round disc on the mast, turned full on to the line; thus—

The *caution* signal "*to slacken speed*," is shown by a *green flag* on a separate flag-staff, on the left-hand side of the train.

The signal "*to stop*," is shown by a cross-bar on the mast, being full on to the line, the round disc being turned on edge, and consequently not visible; thus—



Also, by a *red flag* shown on a separate flag-staff on the left-hand side of the train.

NIGHT SIGNALS.

The signal "*all right*," is shown by a *white lamp* fixed on the flag-staff on the left-hand side of the train.

The *caution* signal "*to slacken speed*," is indicated by a *green lamp*, shown in the same way.

The *danger* signal "*to stop*," is indicated by a *red lamp*, shown in the same way.

N.B. No signals are shown at night at Goring or Hanwell stations. Both lamps at Pangbourne, Goring, and Shrivenham Stations are placed on the south side, on account of the curves.

* * All former signals or regulations for the management of them are cancelled by the substitution of these orders.

February, 1841.

I, the undersigned, being appointed in the service of the Great Western Railway Company, do hereby bind myself to observe and obey the foregoing regulations as to signals.

Date _____

Appointment _____

Witness to signature.

Signature.

GENERAL REGULATIONS FOR THE POLICE, COMPREHENDING INSPECTORS, SUB-INSPECTORS, &c.

1. Each person to devote himself exclusively to the Company's service, attending during the regulated hours of the day, and residing wherever he may be required.
2. He is to obey all orders and instructions he may receive from the Committee of Management, or from persons placed in authority over him, and conform to all the regulations of the Company.
3. Each man will be liable to immediate dismissal for disobedience of orders, negligence, or other misconduct.
4. He is strictly forbidden to receive money from any person, under any pretence whatever; and any case of incivility, or rudeness to passengers, will meet with instant punishment.
5. No instance of intoxication when on duty will be overlooked, and any man dismissed from the Company's service for that offence will be liable to a fine by the magistrates.
6. Each man must appear when on duty in uniform, (to be provided by the Company,) in a proper state of neatness and cleanliness.
7. Every man dismissed, or who shall resign his situation, shall, before he quits the Company's service, deliver up every article of dress, and of the appointments which shall have been supplied him.

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8. If any such article shall have been improperly used or damaged, a deduction from any pay due to the man shall be made, sufficient to make good the damage, or supply a new article.

9. He is not to quit the Company's service without giving one month's previous notice of his intention, and in case of his quitting without such notice, all pay then due shall be forfeited.

10. The pay of every man absent for sickness, or without leave, to be suspended for the special order of the Directors on each case.

11. The duties of the police may be stated generally to consist in the preservation of order in all the stations and on the line of railway. They are to give and receive signals; to keep the line free from casual or wilful obstructions; to assist in case of accident; to caution strangers of danger on the railway; to remove intruders of all descriptions; to superintend and manage the crosses or switches; to give notice of arrivals or departures; to direct persons into the entrance to the stations or sheds; to watch movements of embankments or cuttings; to inspect the rails and solidity of the timber; to guard and watch the Company's premises; and to convey the earliest information on every subject to their appointed station or superior officer.

12. The inspector is the chief officer of police, sub-inspectors next in authority, and the constables are to submit to all orders received from them.

13. The hours of attendance, place of residence, and duty of each individual, will be detailed in a separate order, signed by the inspector.

I, the undersigned, being appointed in the service of the Great Western Railway Company, do hereby bind myself to observe and obey the foregoing regulations.

Witness to signature.

Signature.

Appointment.

RULES and Regulations for Enginemen and Firemen.

Pay and Conditions of Service.

1. Every man must devote himself exclusively to the Company's service, attending at such hours as may be appointed, and residing wherever he may be required. He is to obey all orders and instructions he may receive direct from the Committee of Management, or the engineer-in-chief, or the superintendent of the locomotive department, or from any officers of the Company placed in authority over him, and conform to all the general regulations of the Company.

2. The weekly pay which may be fixed for each man will always include his services during all such hours, whether early or late, as may be determined upon from time to time by the superintendent, according to the arrangements of the trains during the week, and which hours will be so arranged as to give to each man a fair average day's work.

The pay of every man absent from sickness, or without leave, will be suspended until the special order of the Directors is obtained in each case.

If an engineman be not required for his full time upon the line, he is to employ the remainder of his time in the shop, and under shop rules, and at any work the foreman may give him. He will also keep a shop time-book, according to the rules, as applying to the fitters.

In addition to the pay of an engineman, annual premiums of 5% or 10%, as the case may appear to the Directors to justify, will be given for general good conduct and length of service, for the efficient working of the engines and economical use of fuel and stores, and particularly to those enginemen who, by proper care and attention to the following regulations, shall avoid all accidents or delays to the trains.

3. He will be liable to immediate dismissal for any, the slightest, instance of insobriety; for disobedience of orders, for negligence, or other misconduct, as well as to punishment under the "Act for regulating Railways," or any other Act applicable to the case.

He will be liable to fines, to be determined by the Directors: and if dismissed for any serious fault, or if quitting the service of the Company without giving one month's previous notice, the whole or a portion of any arrears of pay then due, as may be determined by the Directors, will be forfeited.

General Rules for Conduct.

4. He must appear on duty dressed in white fustian clothes, which are to be clean every Monday morning, or on Sunday, when he may be required to work on that day.

5. Each engineman will be provided with the following tools, for which he will be held responsible:—One screw-jack, two pinch-bars, two buckets, one long and one short drag-chain, a proper quantity of fire-irons, oil-cans, &c.; a complete set of screw-keys, shifting-key, and monkey; also a small chain and padlock, to fasten the different articles together. Three lamps will also be provided: one a green lamp, which, after dusk, or during fogs, must always be lighted, and fixed in front of the engine, or of the tender, if from any cause the tender is in front; the other a gauge-light; and the third, a hand-lamp, having a white and a red glass. All which lamps must be delivered into the care of the storekeeper every night or morning when done with, and taken out again when the engine is ready to go out.

To each engine will also be appropriated a book, and the engineman, previous to getting either coke or stores, must take the book to the storekeeper, and have set down the quantity of each article he may require, and he must receive neither more nor less than the quantity shown in the book.

6. The duty required of each engineman will be determined each day by the superintendent

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of the locomotive department; and no turn of duty is to be altered, and no overwork is to be undertaken by any man, on any account, without the sanction of the superintendent or his principal assistant at the station be first obtained, except on sudden emergencies, and the case must then be reported to the superintendent immediately.

7. The engineman must be with his engine at least three quarters of an hour previous to his time of starting, as fixed by the superintendent of the locomotive department, and the firemen at least one hour before that time. And the engineman will be responsible for having his engine in perfect order, the steam up, with the necessary stores and tools, the tender full, and his fireman at his post, not less than ten minutes before the hour appointed for starting.

8. At five minutes before the hour of starting with any train, and not sooner, the engineman will place his engine in front of the train. After that time, and until the arrival of the train, he will be under the order of the conductor, in all matters affecting the starting, stopping, or the motions of the train; and in case of any accident to the train, he will, if required, disconnect his engine, and proceed where he may be ordered by the conductor, and generally he will obey promptly all orders or signals given to him, whether by superintendents of stations or the conductor, so far as the safe and proper working of his engine will enable him.

9. While the engine is standing still, whether before starting or at a station, or on the line, for however short a time, the slides are always to be thrown out of gear, the steam shut off, and the tender-break to be screwed tight, until the signal for starting be given by the conductor, and the engineman must be careful always to start or stop steadily, and without jerking the train; and he shall at no time leave the engine without seeing that the above rules are strictly complied with, and then not without leaving the engine in charge of his fireman.

10. No engine must ever, on any account whatever, be moved from any of the stations on to the main line, except when the engineman is proceeding in his turn, and at the proper time, to take his place in front of a train: or, when on the main line, he must never run beyond the limits which may be fixed at each station without a regular despatch-note, filled up and signed by the proper superintendent or foreman, and he must then follow strictly the orders contained in such despatch-note, both as regards the time of starting and the place and time of returning.

11. The engines are never to run forward on the right-hand road, but always to move on the south road from Paddington towards Bristol, and on the north road from Bristol towards Paddington, except when specially ordered to do otherwise, upon accident or emergency, by the conductor of a train, and then the engineman must always ascertain from the conductor, and also satisfy himself, that the police have been made aware of the circumstance for the whole distance which he proposes to run; and he must proceed slowly, and continue to sound his whistle by beats the whole time. When dark, and in the evening before it is dusk, the engineman must see that his lamps are trimmed and ready, and must take care that the green lamp is lighted and fixed in front, or to the tender, if from any cause he is moving tender first; and if without a train, that a red lamp is fixed behind; and if he should be upon the line without his lamps, he must procure some from the storekeeper at the next principal station.

12. The exact time for performing each portion of the journey will be fixed by the Directors, and the great object of the engineman must be to keep his engine going regularly at the speed required, and from which speed he should vary as little as possible, never exceeding the speed actually required for keeping the time punctually, and therefore never arriving at any of the stations, or any part of the line, or at the end of the journey, before time.

The goods-train is to travel at an average rate, when moving, of 15 miles per hour, and is at no time to exceed the rate of 20 miles.

13. The engineman and his fireman only to be upon the tender, and no other person whatever to be allowed to ride with them, unless by the special order of the engineer-in-chief, or of the superintendent of the locomotive department, or in case of need during the journey, by direction of the conductor of the train.

14. The engineman is to keep a good look-out for any signals at gates or stations, or from the police on the line, either for checking his speed or stopping entirely; all which signals, or any other indication of danger, he is responsible for seeing and attending to immediately, without waiting for the conductor's orders, and he must immediately obey any signal made by a policeman or gatekeeper, even if he should see reason to think such signal to be unnecessary.

And before starting his engine at any time, whether in the station or on the line, and particularly before arriving at any gate or station, or before approaching and when entering any tunnel, or if any workman or any obstruction be seen upon the line, the engine-man shall sound his whistle; and when any obstruction is seen on the line, or any cause whatever to create a doubt of the safety of proceeding, he is to shut off the steam and sound the whistle, and stop altogether. And if the engineer is engaged with any part of the engine, the fireman must keep on the look-out, and act for the engineman; and the fireman must be at all times ready, at a signal from the engineman, to go to the break; and when approaching any station where the engine is to stop, or observing any obstruction on the line, or seeing any signal intimating danger or caution, it is the duty of the fireman, without waiting for orders, to go to the break, and to warn the engineman instantly; and in the event of the engineman being, by accident or other circumstance, rendered incapable of doing his duty, the fireman is to undertake the management of the engine until he can be replaced—proceeding with great caution, and reporting the circumstance to the conductor at the first opportunity.

If any other man besides the fireman (specially employed) be upon the tender, then one of the two must always be stationed and remain at the break.

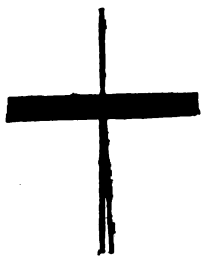
15. Before arriving at the stations, and particularly at those where the lines cross into sidings, he must reduce his speed in proper time, and use the break so as to have the engine completely under his command, and enable him to stop altogether if necessary, before entering the curve, and to stop exactly at the proper part of the platform; and, to do this properly, he

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must of course consider the weight and length of the train, the speed of the engine at the time, and the circumstance of the rails being slippery or otherwise.

16. The signals at the stations, gates, &c., are:



The round disc turned on edge, and consequently not visible, and the cross bars full on, or a red flag by day, or a red light by night,

To stop,—that the station is not clear, or that another train is less than three minutes a-head, and that the train must come to a complete stand before entering or arriving at the station.

A green flag by day, or a green light at night,

To go slowly,—that a train is less than 10 minutes a-head, that the line is bad, or that some other cause exists for precaution and for going slowly.



The round disc turned full on, and the cross bars off by day, or a white light by night—

All right.

The signals on the line are:—

The policeman holding both arms up, or a red light by night—

To stop.

Holding one arm up, or a green light—

Go slowly.

Holding his arm horizontally, or a white light—

All right.

Also, any light waived backwards and forwards horizontally is a signal to stop.

When passing another engine, the drivers must always stand on the right-hand side, so as to be next each other in passing, and must always signal each other with the same signals as those above described, to tell whether the line which they have passed is clear, or whether a train is a-head or any cause of danger exists.

17. If from any cause one engine follows or overtakes any engine also moving in the same direction, the engineman must keep at a distance of at least 500 yards; and if a train is in front, he must keep at a distance of at least half a mile; and whenever the signal is given that a train is a-head, he must reduce his speed, even if the train be not in sight; and, after passing any such signals, he must be particularly careful in approaching any station, or in passing those parts of the line where he cannot see far a-head.

18. If any train or engine be discovered at a stand on the opposite line it must be approached and passed slowly. When dusk or dark, or during a fog, snow-storm, or violent rain, the whistle must be sounded frequently for the whole distance; and when approaching any station or gate more than usual precaution must be used; and if the signals, from fog or any other causes be not clearly seen, the train must be completely stopped before entering the curves into any station, or before arriving at the platform where there is no siding, and the engineman is not on any account to proceed until he receives direct information from the policeman that the line is clear.

19. If an engine be sent on the line with a despatch note, without any train, or from any other cause, without a conductor, the engineman will be entirely responsible for all the movements of the engine, and, in addition to the precautions and rules above required to be observed, he must, in the event of any circumstance compelling him to stop, send back the fireman with the red light, if after dusk, to the next policeman, and warn him of the circumstance; and if obliged to cross on to the other line, he must always move forward on his proper line to the next crossing a-head, and never return on the wrong line. Any engineman proceeding with a despatch note must be careful to proceed at the same average rate as the passenger-trains, and on no account to run his engine at higher speeds at any part of his journey, unless otherwise specially ordered in the despatch note.

20. In case of any accident to the engine or train causing a complete stoppage, the engineman, after giving such directions to his fireman to open the fire door, rake out the fire, or otherwise, as may be necessary for the safety of the engine, must immediately seek the conductor of the train, and communicate with him, and receive his directions; and in the absence of the conductor, the engineman must himself ascertain whether the engine and train be clear of the opposite line, and of any train passing upon it, and remove the passengers from the carriages if they do not appear quite clear, and must send a guard, or other special messenger, each way to the next policeman to stop any trains coming up; and if dusk, or dark, he must see that the carriage lamps are so turned that his own and the front carriage lamps shall show red lights forward, and the tail lamps as usual show a red light backwards; and he must also rake out and make up a fire on the other line, for the purpose of forming an additional signal.

And, in the event of any such accident causing stoppage, particularly in a tunnel, the engine-man must occasionally hold down the steam valve, to prevent the noise, and allow of orders being more easily given and heard.

I, the undersigned, being appointed in the service of the Great Western Railway Company, do hereby bind myself to observe and obey the foregoing regulations.

Date _____

Appointment _____

Witness to signature.

Signature.

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LETTER relative to the opening of the line to Bridgewater, in answer to Sir F. Smith's letter of the 4th inst.

Bristol and Exeter Railway Office, 30, Broad Street,
Bristol, May 17, 1841.

SIR,

IN answer to your letter of the 4th inst., I am directed to state to you that a return of the proposed out-door establishment for the working of the portion of the Bristol and Exeter Railway, intended to be opened in the course of the present month, will be furnished as soon as the extent of the requisite force can be correctly ascertained.

In the mean time, I am instructed to assure you that this line will be worked and protected in every point by a force as effective for the purpose, as that which has hitherto been employed under similar circumstances upon the Great Western Railway.

The section and tracing which you require will be furnished by Mr. Brunel, the Company's engineer-in-chief, to whom I have transmitted a copy of your communication.

I have, &c.

J. W. BADHAM, Secretary.

Sir Frederic Smith,
&c. &c.

Bristol and Exeter Railway Office, 30, Broad Street,
Bristol, May 25, 1841.

SIR,

ON my return last night from Bridgewater, I called upon the solicitors in hope of transmitting to you this morning an official report of the trial at Taunton, between this Company and Mr. Charles Henry Payne, of Uphill; but their offices were closed, and I am fearful that it cannot be obtained in time for this day's post.

His plea for an injunction was that the line deviated more than 100 yards from the Parliamentary line, measuring from the centre of the latter to the outside of the former; but the judge decided that this mode of ascertaining the difference was contrary to the meaning of the Act, and that the deviation was within the 100 yards. Mr. Payne's is the only attempt to show a deviation beyond the distance limited by the Act.

I have, &c.

J. W. BADHAM, Secretary.

P.S.—Since writing the above, I have procured the enclosed statement from the solicitor who conducted the suits with Mr. Payne on behalf of the Company.

N.B.—Mr. Saunders and Mr. Clark had a narrow escape with their lives, from a place which you and they had several times occupied.

They had not left a trowley which followed the engine three minutes before the velocity threw the former over the rail, broke the axle and dashed it with such tremendous violence, that the concussion must have been fatal to them if they had not providentially exchanged their seats in time to avoid it.

I mention this, Sir Frederic, to you, because I observed some evidences of that want of caution which familiarity with danger is so apt to produce.

Sir Frederic Smith,
&c. &c.

MY DEAR SIR,

King Square, May 21, 1841.

IN answer to your inquiry respecting the action by Mr. Payne against the Bristol and Exeter Railway Company, I have to acquaint you that in 1838 he obtained an injunction from the Vice Chancellor against the Company, on the ground that the line as set out was a deviation beyond the Parliamentary limit, but, on my filing the affidavits of our engineers in answer, the injunction was dismissed with costs.

We then summoned a jury to assess the value of his land, as he refused to treat with the Company, and he immediately applied to the Court of King's Bench, by means of a rule nisi, to show cause why our inquisition should not be quashed; and this rule, on our showing cause, shared the fate of the injunction, and was discharged with costs.

Mr. Payne next brought an ejectment to deprive the Company of the land thus taken, which was tried in 1839 at Bridgewater before Mr. Justice Erskine and a special jury. On this trial the real question was, whether the line as actually formed (the cutting through Uphill being

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then open) exceeded the Parliamentary deviation; and in support of the affirmative, Mr. Payne called two surveyors and an engineer, whose evidence was answered and explained by Mr. Brunel and Mr. Gravett; whereupon the jury, under the judge's direction, that the deviation was proved to be within the just limits, found a verdict for the Company.

Mr. Payne disputed the law laid down by the judge, who accordingly reserved several points for the opinion of the Court of Exchequer, chiefly arising on the construction of the deviation clause, and the Company's right to construct the railway in the line, course, and manner laid down.

On the argument in Hilary Term, 1840, the Court unanimously decided these questions in favour of the Company, who accordingly retained the verdict of the jury, and Mr. Payne had to pay the costs of the trial and other proceedings, since which he has not renewed his litigation. Perhaps it is right to add, that he is the only land-owner with whom the Company have had either suit or action.

I am, &c.

J. W. Badham.

CHARLES SAVERY.

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No. 4.

GREAT WESTERN RAILWAY.

LETTER sent to the Secretary of Great Western Railway Company, enclosing Copy of Sir Frederic Smith's Report on the Great Western, the Cheltenham and Great Western Union, and the Bristol and Exeter Railways.

SIR,

Board of Trade, June 11, 1841.

I AM directed by the Lords, &c., to transmit to you the enclosed copy of a report from Lieut.-Col. Sir F. Smith on the Great Western, the Cheltenham and Great Western Union, and the Bristol and Exeter Railways, and to beg you will lay it before the Directors of the Great Western Railway Company at their next meeting.

I am, &c.

The Secretary of the Great Western Railway Company.

S. LAING.

In Reply to Letter from this Office of the 11th June, &c.

SIR,

Princes Street, Bank, 17th June, 1841.

I HAVE the honour to acknowledge the receipt of your letter of the 11th instant, which, together with Sir Frederic Smith's report transmitted to me in it, have been duly submitted to the Board of Directors.

Until I had the pleasure of seeing you this day, I was not aware that the notice which I had given to the Board of Trade on the 22nd April related exclusively to the opening of the portion of railway between Wootton Bassett road and Chippenham. It had been my intention, and I have long been under the persuasion that I had in fact given to you the notice, not only for the portion of line referred to, but also for the remaining part between Chippenham and Bath, as intended to be opened shortly after the other could be completed.

This inadvertent omission leaves me in the predicament of having failed to give the required notice for one month previously to the period of having the railway ready for public use; but I trust that the Lords of the Committee of the Privy Council for Trade will not, on that account, feel it necessary to interpose to prevent the opening of the line, if, upon proper inspection, it shall appear to them to be completed in such manner as to admit of traffic being carried on without danger to the public.

I may mention that the general convenience of passengers is materially involved in the early completion of the only unfinished portion of the Great Western Railway. The change from the railway at Chippenham to coaches, and again from the coaches at Bath to the railway is naturally attended with great personal inconvenience and delay, which it is the anxious wish of the Directors to obviate as soon as possible. The engineer expects that the works, permanent way, &c., will be completed so as to open throughout on the 28th instant, and I trust you will be good enough to facilitate the arrangements for that purpose, by intimating to me the sanction of the Board of Trade in that step, provided the general Inspector of Railways shall report favourably on the line.

I have, &c.,

S. Laing, Esq.
&c. &c.

CHARLES A. SAUNDERS, Secretary.

LETTER sent to the Great Western Railway Company in reply to their Letter of the 17th June, relative to opening the Line between Chippenham and Bath.

SIR,

Board of Trade, 18th June, 1841.

I AM instructed by the Lords, &c., to acknowledge the receipt of your letter of the 17th instant, and to inform you in reply, that under the circumstances therein stated, their Lordships do not feel disposed to interpose any obstacle of a formal nature in the way of an object of such importance for the public interests as well as those of the Company, as the complete opening of the line to Bath at the earliest possible period consistent with the public

safety. Their Lordships therefore will not object to the opening of the line from Chippenham to Bath, whenever it is reported by Sir F. Smith as in a fit state for public traffic.

Chas. A. Saunders, Esq.
&c. &c.

I am, &c.,
S. LAING.

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REPORT of Lieutenant-Colonel Sir Frederic Smith on his Inspection of the Great Western Railway, between Chippenham and Bath.

SIR,

Board of Trade, Whitehall, 29th June, 1841.

I HAVE the honour to acquaint you, that in consequence of the notice received from Mr. Saunders, the Secretary of the Great Western Railway Company, of the intention of the Directors to open that portion of their line that lies between Chippenham and Bath, and by which the railway communication from London to Bristol and Bridgewater will be completed, I have devoted the last three days to an inspection of this part of the railway, and I enclose, as the best description I can give of its state, a copy of a letter that I yesterday wrote to Mr. Saunders.

In that letter, you will observe that I pointed out those matters which the most required his care and the attention of the chief engineer of the line; and I trust that the public traffic, may, by their joint exertions and vigilance, be conducted with safety.

I expect an answer from Mr. Saunders, which I will lay before you as soon as it reaches me.

I have, &c.,
FREDERIC SMITH, Lt.-Col., R. E.,
Inspector-General of Railways.

The Right Hon. Henry Labouchere, M.P.
&c. &c. &c.

SIR,

Bath, June 28th, 1841.

WITH reference to your notice of its being the intention of the Directors of the Great Western Railway Company to open, on the 30th instant, that portion of their line which will connect Chippenham with Bath, and thus complete that magnificent work which will afford railway communication between the metropolis and Bristol, I have to acquaint you that I have inspected the portion of the line in question, and while I desire to express my unqualified praise of the finished parts of the railway, it is necessary that I should point out to you those works which will require to be put into a more complete state before the contemplated opening.

These consist chiefly of fences, ballasting, and bridges.

In the first place, there are, in various parts of the line, gaps in the fences which, for the safety of the public, it is indispensable to fill up; though in some spots of small extent, these deficiencies notwithstanding demand attention, and I am particularly desirous of bringing to your notice the fences at the following places, viz. :—

Between the 94 and 95 mile posts.

Near the Patterdown Bridge.

The approach to Chapman's Bridge, where the fences are insecurely fixed.

At Hingley Bridge where the line is not fenced in from the road.

Between the Bath-road bridge and the Avon, where the railway is contiguous to the turnpike-road, a fence is required to separate them.

Near Rose Mount Cottage a considerable length of fence is required.

The foregoing are all essential to prevent cattle straying upon the line and thereby endangering the safety of the traveller, and it would if practicable, be desirable that, before the opening, the parapet wall along the top of the retaining wall, between the canal and the railway, as well as the balustrade to separate the railway from Sydney Gardens, should be built.

With respect to the bridges, I have the following observations to make :—

The south-western wing wall of the first bridge beyond the Chippenham station is slightly bulged. As the embankment which this wall retains is lofty, and serious mischief might result from its giving way at the moment a train might be passing, it is very desirable that steps should be taken at the first convenient opportunity to remedy this defect.

At a short distance from this bridge there is an occupation passage through the embankment. The flank walls are unfinished and the arch is supported by timbers to resist the weight pressing against it. These points require early attention.

The coping is unfinished of the bridge over the London turnpike-road.

The side walls of Patterdown Bridge are crippled; if there be room between them they had better be strengthened by external piers, and if not, it may be necessary that the walls should be taken down and rebuilt.

Chapman's Bridge will require to be early underpinned; as will the northern pier of Pound Pill Bridge, and the parapet wall of the latter should be forthwith built.

The aqueduct between Pound Pill Bridge and Potley Lane Bridge, is I presume not yet finished; nor is the parapet of the latter.

The balustrade and wing walls of the western entrance of the Box tunnel are still incomplete; as is the coping of the Ashley Green Bridge.

The bridge for the parish road near Sydney Gardens; the approach to the adjacent iron bridge; and the coping and approach of the bridge, east of it, are unfinished. It is of great

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importance to the public safety that if these bridges should not be finished before the opening of the line, the strictest orders should be issued to prevent any obstruction being thrown on the rails in the course of the operations for their completion.

The permanent way is yet far from finished, but as the embankments are complete, and the cuttings, with few exceptions, cleared out, it may be possible to lay the remainder of the rails by the 30th; but I am desirous of recommending that great attention may be paid to their being properly screwed down to the timbers, in which I at present observe a deficiency.

The ballasting is generally scanty, and especially at some of the outer curves on the lofty embankments. This point wants peculiar care.

I am glad to find that it is the intention to remove some earth which is still in one of the cuttings by means of an extra line, so as to avoid those chances of accident which would exist if for that purpose either of the permanent lines of rails were to be used.

The distance posts are not yet put up for the greater part of the line intended to be opened. It is indispensable that this deficiency should be supplied.

Although this is the day which you proposed for my inspection, yet you will perceive from the foregoing account, and you must be aware from your personal knowledge of the state of the works, that they are not in such forwardness as to justify my unconditionally sanctioning the opening on the 30th instant. I shall however with the view of meeting the wishes of the Directors and the convenience of the public, so far as may be consistent with my duty, make another complete inspection of the works to-morrow, but as I even then do not reckon upon their being finished, I can only sanction the opening of this portion of the line with the clear understanding that your chief engineer satisfies himself, by a personal inspection, before the running of the first train, that all the points which I have mentioned have received that degree of attention which is essential to the public safety; and I earnestly hope, that for a few days, the rate of speed may be very moderate over the newly laid portion of the line.

I need hardly add that I rely on your having fulfilled all the stipulations of the Acts of Parliament bearing upon the portion of the line now under consideration, and that you will not fail to extend to it the same degree of care in the arrangements for the police, signals, and other means of protecting the public from accidents that prevails on other parts of the Great Western Railway.

In conclusion, I would call to your recollection that the signal posts have not yet been put up.

I have, &c.,
FREDERIC SMITH, Lt.-Col., R. E.,
Inspector-General of Railways.

Charles A. Saunders, Esq.,
&c. &c. &c.

SIR,

Princes Street, Bank, June 29, 1841.

I AVAILED myself of the earliest moment after I had the honour to receive your letter of yesterday's date, to submit it to the Directors of this Company, at the same time acquainting them with the result of your subsequent inspection of the line, and suggesting for their approval and adoption the mode of working the line between Box and Bath, which had been sanctioned by you, as the best plan until the engineer could fully supply the deficiencies pointed out in the course of your final inspection.

Every precaution which was suggested or approved by you was immediately taken, and the course which had been laid down and specifically defined at the interview which Mr. Brunel and I had with you at Box, has been strictly adhered to.

I am desired, on the part of the Directors, to assure you of their determination to carry fully into effect every recommendation you have felt it your duty to make on this occasion.

With regard to the police establishment and signals, I may say confidently, that the arrangements are, in every respect, as complete and effective as upon any portion of the line, when it has been first opened, and you may rely upon the personal care and superintendence of the engineer and locomotive superintendent as well as of myself, in the control and management of the public traffic, until every requirement shall have been satisfied to its utmost extent.

I beg to express also the sense entertained by the Company of the very laborious and anxious pains taken by you in the course of this inspection, to render the arrangements complete and safe for the public, as well as satisfactory to the interests and wishes of the Directors of the line.

Sir Frederic Smith,
&c. &c. &c.

I have, &c.,
CHARLES A. SAUNDERS, Secretary.

No. 5.
Ulster Railway.

No. 5.

ULSTER RAILWAY.

REPORT of Lieutenant-Colonel Sir Frederic Smith on the Opening of a portion of the
Ulster Railway.

SIR,

Dover, July 2, 1841.

WITH reference to the letters bearing date the 12th and 17th instant, from the Secretary of the Ulster Railway Company, communicating that it is the wish of the Directors of that line to open a further portion of it on the 17th instant, for a temporary purpose, I have

the honour to acquaint you that as it seemed unnecessary that I should personally inspect this part of the line which is only about two miles and three-quarters in length, and yet it being indispensable to ascertain how far it might be advisable for the Lords of the Committee to be parties to the intended proceeding of the Ulster Railway Company, I addressed a letter to Mr. Smith, the secretary, of which I enclose a copy, my object being to learn, as nearly as possible, the condition of the line and the main features of the system of working it, as well as the proposed arrangements for the extension.

I transmit Mr. Smith's reply, dated the 29th ultimo, giving answers to my several queries.

The statement of Mr. Smith is quite satisfactory, except upon two points, the one of the utmost importance, and the other also of considerable moment.

My report of the 16th ultimo, on the accident which occurred on the Sheffield and Rotherham Railway, will have placed before you a view of the fearful risks to which the servants of a Company and the passengers are exposed by the practice, which is by all experienced persons admitted to be extremely dangerous, of working trains with the tender foremost. This proceeding should in my opinion never receive the sanction of the Lords of the Committee, and as Mr. Smith states it to be the intention of the Ulster Company to work the trains in one direction tender foremost, I am of opinion that a protest should be made against so improper a course. Mr. Smith, in the second place, states, that a break carriage forms part of every train, but he observes that the trains are always stopped by the break on the tender. This I consider a much less safe course than the more general one of applying the break to the wheels of the passenger carriage at the same time that the tender break is used; and I therefore recommend that a suggestion should be offered to the Ulster Railway Company to adopt the more usual course, which experience on the great lines has shown to be the safer, and at the same time they should be advised to place the break carriage at the hinder part of the train.

I have, &c.,

FREDERIC SMITH, Lt.-Col., R. E.,
Inspector-General of Railways.

The Right Hon. Henry Labouchere, M.P.,
&c. &c. &c.

Appendix.

V.
Reports relating to
the Opening of
New Lines.

No. 5.
Ulster.

SIR,

Board of Trade, Whitehall, London, June 25, 1841.

I HAVE the honour to acquaint you that your letters of the 12th and 17th instant, which were received at this office during my absence from town, were on my return placed in my hands.

With reference to the notice contained in your letter of the 12th instant, of the intention of the Directors of the Ulster Railway Company to open on the 17th of next month a further portion of the line for an extent of two miles and three-quarters, and for a period of 10 days only, I have to request that you will favour me by return of post, if possible, with the section and plan, both drawn to the Parliamentary scale, of the portion of the railway in question, and I beg you will furnish me with information on the following points.

1. As to whether there are any crossings of high roads on the level, and what precautions, if any, are proposed to be taken to prevent collisions at those points.

2. Whether the railway has been constructed with a single or with a double line, and if the former, what arrangements will be made to avoid collisions.

3. Whether there are any trains at present worked after dark, and whether it is intended to run trains after dark on the portion of railway proposed to be opened on the 17th proximo, during the 10 days it will be in operation.

4. What number of intermediate stations there will be between the termini, and whether at the period of the races it is proposed that the trains shall stop at all of them, and if not, whether the trains will be required to diminish their speed on passing those stations at which they are not to stop.

5. At what intervals it is proposed to run the trains during the race days.

6. The gauge of the rails.

7. The weight per lineal yard.

8. Whether they are fixed on longitudinal or cross sleepers, or on stone blocks.

9. Whether the engines are four or six wheels, and what is the diameter of the driving wheels.

10. Whether there are breaks attached to any of the carriages, and in what proportion.

11. Whether there are buffer springs attached to any of the carriages.

12. Whether it is the practice of the Ulster Company to intermix passenger carriages with goods' waggons.

13. Whether turn tables will be fixed at the proposed terminus, to admit of the engine and tender being turned so as to prevent the necessity of the trains being worked tender foremost.

14. What is now the average speed it is proposed to limit the trains over the portion of railway proposed to be opened.

15. Whether the permanent way of that portion of railway is now complete and properly ballasted. And,

16, whether the fences, signals, and mile posts are erected.

I have, &c.,

FREDERIC SMITH, Lt.-Col. R. E.
Inspector-General of Railways.

John G. Smith, Esq.,
&c. &c.

Appendix.

V.
Reports relating to
the Opening of
New Lines.

No. 5.
Ulster.

SIR,

Ulster Railway Office, Belfast, June 29, 1841.

AGREEABLY to the request conveyed by your letter of the 25th instant, I have this day forwarded a plan and section of that part of the Ulster Railway about to be temporarily opened.

With reference to the information on the several points contained in your letter, I have the honour to submit the following replies.

1. There is one public road crossing on the level, on the portion of the line to be opened, and the precautions taken at this point will be similar to others on the line, viz. by placing gates across the public road, which will be closed at the time of the passing of the trains, a policeman being fixed on the spot, whose only duty is to attend to this business.

2. The railway is constructed with a single line, and as but one train is or will be running, no collisions can take place.

3. There is no train at present running after dark, nor is any intended.

4. There will be no intermediate station on that portion of the line proposed to be opened, but between the two termini, Belfast and the Maze, there will be two intermediate stations, as at present, at both of which the trains will stop.

5. There will be no alterations in the intervals of running the trains beyond that in operation at present, viz., every alternate hour from each termini, commencing at seven in the morning, and running seven trains.

6. The gauge of the rails is six feet two inches in the clear.

7. The weight per lineal yard of the rail is about 63 lbs.

8. The line is laid in continual or longitudinal bearings, 13" x 6½", with a transverse sleeper 8" x 4" at intervals of about 10 feet.

9. The engines have six wheels, and manufactured by Sharp, Roberts, and Co., of Manchester, and the driving wheels are six feet in diameter.

10. There are breaks on three carriages, but generally one in a train, consisting of three or four carriages, but have never had occasion to use them, the break on the tender being always sufficient for stopping the trains.

11. There are buffer springs to all the carriages.

12. There are no goods' carriages at present on the line, the arrangements for that purpose not being completed.

13. There will be no turn-table at the proposed terminus, and the trains will be worked in one direction tender foremost.

14. The average speed of the trains at present is about 25 miles per hour, and it is not intended to diminish that speed on the portion proposed to be opened.

15. The permanent way is complete and properly ballasted.

16. Arrangements are made for all the necessary signals, and half-mile posts will be erected.

Lt.-Col. Sir Frederick Smith,
&c. &c. &c.

I have, &c.,
JOHN G. SMITH, Secretary.

LETTER sent to the Ulster Railway Company, with Copy of Lieutenant-Colonel Sir F. Smith's Report on the Opening of a portion of the Line.

SIR,

Board of Trade, July 3, 1841.

I AM directed by the Lords, &c., to transmit to you a copy of a letter from Lieutenant-Colonel Sir Frederic Smith to the President of the Committee, relative to the opening of a portion of the Ulster Railway on the 17th instant, and I am further directed to state that unless arrangements can be made for complying with the recommendations contained in Sir F. Smith's letter, their Lordships will not consider themselves justified in giving their sanction to the proposed opening.

The Secretary of the Ulster Railway Company.

I am, &c.,
S. LAING.

IN reply to Letter from this Office of the 3rd instant, relative to Sir F. Smith's Report on the Opening of the Line.

SIR,

Ulster Railway Office, Belfast, July 5, 1841.

I HAVE the honour to acknowledge the receipt of your letter of the 3rd instant, enclosing a copy of a report from Sir Frederic Smith to the President of the Board of Trade, on the subject of the proposed temporary opening of a portion of this railway, and I am desired to inform you for the information of the proper authorities, that the Directors of this Company, anticipating the objections set forth in Sir F. Smith's report, have made arrangements for laying down a turn-table at the proposed terminus, so as to be able to reverse the engine and tender.

In reference to Sir Frederic Smith's remark, on the propriety of applying "the break to the wheels of the passenger carriage at the same time that the tender break is used," I am also desired to state, that although it has never been found necessary to adopt this precaution, the Directors will nevertheless attend to the suggestion in future.

S. Laing, Esq.,
&c. &c.

I have, &c.,
JOHN G. SMITH, Secretary.

No. 6.

BRIGHTON RAILWAY.

REPORT of Lieutenant-Colonel Sir Frederic Smith, relating to the opening of the Line.

SIR,

Brighton, July 10, 1841.

I HAVE the honour to acquaint you, that on the 8th instant I received an intimation from the secretary of the London and Brighton Railway, of its being the intention of the Directors to open to the public, on Monday the 12th instant, that portion of their line which extends from the junction with the Croydon Railway to Hayward Heath, in the county of Sussex.

In consequence of this intimation, and of previous notices which the Brighton Company had delivered to the Railway Department, I appointed to commence the inspection of the works yesterday, with Mr. Rastrick, the engineer of the line, and I was accompanied in my performance of this duty, not only by that gentleman, but also by Mr. Harman, the Chairman, and Mr. Maclean, the deputy-chairman of the Company, by whom every facility was afforded me for conducting my investigation; and I should not omit to mention that Mr. Rastrick and Mr. Wood, the secretary, supplied me with all the plans and sections I required, as well as the various returns of the proposed establishment for working the line, and the code of regulations for the guidance of the police, porters, and switchmen. Those for the engine-drivers I expect to receive on Monday.

I yesterday commenced, and have this day completed, my inspection, and I have to inform you that I see no objection to the line being opened to the public on Monday next, subject to the conditions contained in this report.

In the first place I am desirous of observing that, with very few exceptions, the works are in a very complete, sound, and satisfactory state; and I have on scarcely any previous occasion of inspecting a line, before its opening for the public traffic, found it in so perfect a condition.

The London terminus for this railway is at present the same as that used by the Croydon Company at Tooley-street, and is situated on the north side of the Greenwich Company's western terminus. But pursuant to an Act of last session, a station-house is to be built on the south side of the existing railway, and two lines of rails laid on a viaduct, which is to be formed from the intended station-house to the point of junction between the Greenwich and the Croydon Railways.

The Brighton trains will for the present take in their passengers on the same platform as that assigned for the Croydon passengers; and the trains will run on the down line of the Greenwich Railway as far as the junction with the Croydon Railway, and thence alone the latter line to the junction with the Brighton Railway, being a distance of about nine miles and a quarter.

At the former junction a servant of the Greenwich Company is placed in charge of the "points and signals," and at this junction a servant of the Croydon Company is employed.

The gauge of the three Companies is the same, viz. four feet eight inches and a half, so that the engines of each Company might run upon either line.

The first or northern station of the Brighton Railway is at Croydon. It stands in a most convenient situation, a little to the east of the town, and about one mile south of the point of junction with the Croydon Railway.

At this station are the carriage-sheds, engine-houses, stores, warehouses, and other buildings which are usually placed at the termini of great lines; and it appeared to me that this is the most suitable position for them, and that the general arrangement of the several buildings is well calculated to promote the public safety and convenience, as well as the dispatch of business.

Not only here, but at almost all the stations on this line, the engineer has laid down four sets of rails, and built booking-offices, both for the up and for the down trains, so that the engines and carriages will not stop upon the main lines, nor the passengers have to cross the rails either on joining or leaving the carriages, an arrangement which by tending much to the safety of the travellers, is highly creditable to the Company.

The other stations are as follow:—

The Godstone . . .	4	miles from the junction with the Croydon Railway
Stoat's Nest . . .	5½	ditto.
Merstham . . .	10½	ditto.
Red Hill and Reigate	12	ditto.
Horley . . .	16½	ditto.
Three Bridges . . .	20	ditto.
Balcombe . . .	24½	ditto.
And Hayward's Heath	28½	ditto.

When these stations are finished, which is not the case in two instances, there will be, I conceive, everything that can be required for the safety, convenience, and comfort of the passengers, that the nature and probable extent of the traffic can demand. Throughout the whole length of the line now under consideration, with almost the single exception of a small portion near the north entrance of Merstham tunnel, I found the cuttings cleared out, and the slopes satisfactorily trimmed.

The embankments are generally sufficiently consolidated, and I have no doubt that with proper care, in the very few instances where this is not the case, the traffic may be carried on with perfect safety; I observed with much satisfaction that nearly the whole of the embankments are made considerably wider than the ordinary dimension, which I regard as an element of security in railway travelling.

Appendix.

V.

Reports relating to the Opening of New Lines.

No. 8.

Brighton.

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Reports relating to
the Opening of
New Lines.No. 6.
Brighton.

There are two tunnels on the portion of railway about to be opened, viz. the Merstham and the Balcombe tunnels. The former is 1780 yards in length, and is one of the driest that I have met with; the centre half is lighted with gas, and it is intended to light the whole in the same manner, a gasometer having been erected for this purpose, and the same has been done for the Balcombe tunnel. This latter is only 1122 yards in length. The wet has in some few places penetrated through the arch, but the passengers will not in consequence be subjected to any inconvenience, as these parts of the brickwork have been lined with lead, behind which the leakage is carried off into vertical pipes that communicate with ample culverts, formed not only under this tunnel, but also under the Merstham tunnel.

The bridges have been generally constructed so as to afford even greater accommodation and convenience to the public than is provided for in the Acts of Parliament, and they appear to be of sufficient strength for their respective purposes. There are three of which the parapet and coping are unfinished.

On this part of the line is that magnificent structure, the Ouse viaduct; it is, with the exception of the parapet, formed of brick, and consists of 37 semicircular arches, each of 30 feet span; the extreme height of the centre arch is 96 feet.

The whole length of this viaduct is 480 yards, and the width between the parapets 28 feet. The brickwork is completed, and almost all the centres are struck, but the parapet, which will be very handsome, and of stone from Caen, in Normandy, is yet in a very backward state, and cannot be finished for some weeks. In order, however, to admit of the masons' proceeding with their work without interruption to the traffic of the railway, Mr. Rastrick has established a moveable scaffolding, which traverses along the viaduct on an independent set of rails, and by this means there will be no necessity to admit any of the workmen or their materials within the line of the parapet walls.

The permanent way is only laid at present on the west, or left line, on this viaduct; but with two other exceptions, and these only for a few yards in length, it is complete for both lines of the portion of the railway about to be opened. Where these breaks occur, crossings are put, and Mr. Rastrick has undertaken that the traffic shall be so arranged that two trains cannot meet on the single portion of the line.

The rails weigh 75 lbs. on the lineal yard, and are, on the embankments, laid on transverse Kyanised wooden sleepers, and in the cuttings generally on stone blocks. The bearings are in the middle four feet, and at the ends three feet six inches; therefore there are four to each 15 feet rail, excepting on the tunnels, where five bearers are used, and where the intervals are narrowed to two feet six inches at the ends, and three feet four inches in the other spaces.

The weight of each joint chair is	. . .	26 lbs.
And of the intermediate chair	. . .	22½ lbs.

The fences are of a substantial description, and are complete from end to end of the line on both sides, with proper field-gates; and the mile-posts have been put up, but the signal and lamp-posts are as yet only fixed at the Croydon station; the whole, however, are ready to be put up, and as this may be done in a few hours, this deficiency not delay the opening of the line.

The code of signals is to be the same as on the Great Western Railway; and the superintendent of the Brighton Railway having been an officer in the employ of the former line, is presumed to be acquainted with the system which prevails there.

There are four crossings of parish roads on the level, and gates have been placed at the ends of these roads, and watchboxes provided for the policemen who are to be stationed at these points.

The Earlswood embankment having originally been formed of clay, and in a wet season, has had some slips, but a better material having been thrown in, the work seems now tolerably firm. However, in running over this and some of the other lofty embankments, the engine-drivers must use increased caution until all appearance shall have ceased of an extensive subsidence. I must here remark that for the present the Directors have very properly decided on limiting the average speed to 20 miles an hour, including stoppages.

In order to save time, and as the best means of giving the Directors of the Brighton Railway Company a knowledge of my opinion as to the state of their works, I shall send a copy of this letter to the chairman of the Company, who is now residing here, and who, I am aware, will take an active part in providing for the public safety at, and for some time after the opening of the line; and I will personally explain to that gentleman, as well as to Mr. Rastrick, the engineer, who is also on the spot, the necessity of the greatest vigilance being used at the few unfinished parts of the line, by the superintendent and other officers and the servants of the Company, in order to prevent accidents.

The points of junction with the Croydon and Greenwich lines are also matters of some anxiety, for, unlike the ordinary junction of other railways, these occur where there are no stations, and consequently the safety of the traveller depends mainly on the switchman at each place.

It is to be borne in mind that, until the new station at London Bridge is formed, and the additional line of rails laid, the engines of the three Companies will work on the same rails from the London terminus to the Greenwich junction. Great vigilance will therefore be required at this junction; and it is desirable to impress upon the Directors of the Greenwich Company the paramount necessity of always placing at this important point a policeman of well-established character for strict obedience of orders, steadiness, promptitude and presence of mind, since at this junction, owing to the frequent passing of the Greenwich trains, and to the circumstance of the Croydon and Brighton trains having to cross both the up and the down lines, it will be chiefly on this servant that the safety of the passengers will depend.

My present duty, however, is with the Brighton line; and it behoves the managers of this

railway to make their engine-drivers and conductors fully sensible of the necessity of the strictest obedience being paid to all signals, and of their approaching the two junctions at such a moderate rate of speed as to admit of their having the trains completely under command.

I have here to observe that I was surprised to find that the switchman at the Greenwich junction is instructed to exhibit, as a symbol that the points are right for the Croydon and Brighton trains, a red flag, which is ordinarily the signal of danger. Some alteration on this head is indispensable to prevent confusion and risk to the passengers.

The engines about to be used on the Brighton Railway are both four and six-wheeled.

The carriages are well built, handsome, and convenient; the whole, including the horse-boxes and carriage-trucks, have buffer springs, and there are breaks to all the second-class carriages. These breaks are generally of an improved construction, invented by Mr. Rastrick.

The second-class carriages and horse-boxes have coupées, the latter being intended for the grooms, which will be found a great convenience.

I have, &c.

FREDERIC SMITH, Lt.-Col., R.E.,
Inspector-General of Railways.

The Right Hon. Henry Labouchere,
&c. &c. &c.

Appendix.

V.

Reports relating to
the Opening of
New Lines.

No. 6.
Brighton.

GIVING notice of opening from the Croydon Junction to Hayward's Heath, near Cuckfield, on the 29th June.

SIR, 10, Angel-court, Throgmorton-street, May 26, 1841.

I AM instructed to acquaint you for the information and guidance of the Lords Commissioners of the Board of Trade, that it is the intention of the Directors of this Company to open a portion of the line of railway from the Croydon Junction to Hayward's Heath, near Cuckfield, to the public, on Tuesday, the 29th June next.

I have, &c.

JOHN WOOD, Secretary.

G. R. Porter, Esq.,
&c. &c.

IN reply to Letter from this Office of the 27th ultimo, relative to the Line being Ready for Inspection.

SIR, 10, Angel-court, Throgmorton-street, June 2, 1841.

IN compliance with your request of 27th ultimo, I am instructed to inform you that the portion of the line of this railway between the Croydon Junction and Hayward's Heath will be ready for inspection on the 21st instant.

I have, &c.

JOHN WOOD, Secretary.

S. Laing, Esq.,
&c. &c.

No. 7.

BLACKWALL RAILWAY.

REPORT of Lieutenant-Colonel Sir Frederic Smith on the opening of the Extension of the Blackwall Railway.

No. 7.
Blackwall.

SIR, Board of Trade, Whitehall, July 29, 1841.

I HAVE the honour to acquaint you, that in consequence of a notice, dated the 30th ultimo, having been received from the Blackwall Railway Company of their intention to open to-morrow that portion of their line which extends from the present temporary western terminus in the Minories, to the intended permanent terminus in London-street; I have this day, accompanied by Mr. Routh, the chairman of the Company, and Mr. Bidder, the engineer, made an inspection of the portion of railway in question, and I have to submit the following report:—

The total length of the Blackwall Railway, measuring from its eastern terminus at Blackwall to the intended western terminus in London-street, is $3\frac{3}{4}$ miles.

In the month of July, 1840, the railway was opened to the public from Blackwall to the Minories, being a distance of 3 miles and 900 yards. The length to be opened to-morrow, although only 330 yards in length, will save the greater proportion of the passengers the inconvenience of travelling over about 500 yards of narrow and crowded streets between the Minories and London-street.

The line crosses the Minories obliquely, at an elevation of 18 feet above the level of the paving of the foot-path of the street; then over Cooper's-row and Crutched-friars, terminating (at a level of about 18 feet above the street) on the site of some old buildings which formed part of the eastern side of London-street.

Here the station-house has been erected, facing the west side of London-street and the back of Mark-lane.

The first work of importance on the portion of the line which is now under consideration is the crossing of the Minories.

This has been effected by means of a covered and enclosed bridge, having a span of 63 feet,

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No. 7.
Blackwall.

and being carried by six cast-iron trussed girders, the average weight of each being about 15 tons.

It will be observed by the sketch which I enclose that the girders are of a judicious form, and well calculated for the object to which they are applied.

Either end rests on bed stones of Bramley-fall, 1 foot 8 inches in thickness, supported by a brick abutment. The average bearing on the wall being 2 feet.

I should have preferred a longer bearing on the abutments, and to have had the whole of the girders at each end resting on an iron plate to prevent unequal pressure; but the girders have been some days in their position, and the work has been tested both by carriages running over and remaining at rest upon the bridge.

Vine-street is also crossed upon a girder-bridge, but here the span is only 30 feet. With the exception of these two bridges the entire length of the railway between the Minories and London-street is carried on arches; the arch across Crutched-friars having a span of 53 feet 6 inches.

The whole of the extension line is roofed and enclosed on the sides. This arrangement I understand has been adopted not only with a view to the comfort of the passengers, and to ensure the trains running in and out when the wind is blowing strong in the opposite direction to their course, but also to promote the comfort of the inhabitants of the neighbourhood, by deadening the noise caused by the carriages passing over the rails.

The covering over the Minories bridge is formed of corrugated iron, and of the remainder of the line of slates on light wooden framework.

Light is admitted by side-windows and by a skylight in the day-time, and at night this portion of the railway is lighted by gas.

The rails weigh 56lbs. to the lineal yard and rest on cast-iron chairs, spiked to transverse wooden sleepers, having bearings of 3 feet 8 inches and 2 feet.

The first gradient proceeding westward from the Minories rises 1 in 250 for 505 feet, and the second rises 1 in 100 for 487 feet.

The carriages will be successively detached from the traction rope before reaching the Minories, and will run up to the new terminus by the impetus they will previously have acquired.

They will descend by the force of gravity from the new terminus, and will be attached to the rope, as heretofore, a few yards to the eastward of the Minories.

There is a breaksman and a powerful break to each carriage, so that there need be no apprehension of the carriages overrunning the point where the rope is to be attached.

The works are, with some very unimportant exceptions, in a complete and very satisfactory state, and apparently in good working order, and the station at the terminus is arranged with due attention to the convenience and safety of the passengers.

I do not find that there has been any such departure from the Act of Parliament for this railway as to require the notice of the Lords of the Council, and I am not aware of any objection to the line being opened throughout to-morrow.

To give you an idea of the extent of traffic on this line I enclose the return of yesterday, by which you will perceive that there were no fewer than 7,915 persons carried upon it.

RETURN of Passengers to and from each Station, &c., during Wednesday, July 28, 1841.

FROM	TO							
	Minories.	Shadwell.	Stepney.	Limehouse.	W.I. Docks.	Poplar.	Blackwall.	Total.
Minories . . .		86	234	248	401	335	2,203	3,507
Shadwell . . .	122						318	440
Stepney . . .	264						191	455
Limehouse . . .	252							252
West India Docks . . .	611							611
Poplar . . .	485							485
Blackwall . . .	1,873	157	135					2,165
Total . . .	3,607	243	369	248	401	335	2,712	7,915

First Class.	Second Class.	Total Number.	Total Amount.
2,462	5,433	7,915	152 12 6
		Luggage	0 6 8
			£152 18 8

I should not omit to state that the police on this railway are furnished from the Metropolitan Police Office, a system which the Company finds extremely advantageous, as it gives them the means, in cases of emergency, of increasing the number of constables to any extent they may require.

To the Right Hon. Henry Labouchere, M.P.
&c. &c. &c.

I have, &c.
FREDERIC SMITH, Lt.-Col. R.E.,
Inspector-General of Railways.

No. 8.

NORTHERN AND EASTERN RAILWAY.

REPORT of Lieutenant-Colonel Sir Frederic Smith, &c.

Board of Trade, Whitehall, August 6, 1841.

SIR,

THE Directors of the Northern and Eastern Railway Company having on the 29th ultimo given notice of their intention of opening to the public, on the 9th instant, a further portion of their line, I have this day inspected it with Mr. Bidder, the engineer to the Company, who afforded me every facility for conducting my inquiry, and I have the honour to acquaint you that I am of opinion the opening proposed may take place with safety to the public, subject to the conditions which I shall specify in the course of this report.

The contractors, Messrs. Rope and Mr. Hale, accompanied me in my inspection.

The length of the line at present run over by trains is 19 miles, of which $3\frac{1}{2}$ belong to the Eastern Counties Railway.

The portion now proposed to be opened extends from the temporary northern terminus, at Broxbourne, to Harlow, being a length of seven miles and a half.

This part of the railway has at present only a single line of rails, but Mr. Bidder informs me that in the course of about seven or eight weeks a further opening of four miles in length will take place; and that by that period it is intended to have the second line laid throughout.

In the mean while, I understand the Directors have decided on working the trains, both ways, between Broxbourne and Harlow, by the same engine, and therefore no collisions can take place in the course of the traffic, provided vigilant overlookers or foremen be employed to keep the line clear of ballast-waggons when the trains may be expected. The present order is to work the ballast-waggons at night only, when no trains are running.

In some parts of the line the contractors will use the permanent rails for ballasting the second line. It would have been better if this could have been avoided, but Mr. Bidder has undertaken to make such arrangements with the contractors as to afford every prospect of safety to the traveller.

The bridges over the rivers and navigations are supported either by wooden or cast-iron girders, and appear strong, substantial, and convenient for all parties concerned.

The fences and the ballasting of the line are nearly complete, and the deficiencies may, without difficulty, be made up before the time of opening.

I have pressed on the engineer and the contractors the importance of these points, and they have promised to give their full attention to them; and I should observe that as the engine-driver is directed to take half an hour to travel over the seven miles of railway, the speed will be so moderate as to compensate for the freshness of the works.

The portion of the line now under consideration, with the exception of two short cuttings, consists of low embankments. The cuttings I have alluded to are not quite cleared out to the whole width required for the double line, but the space is amply sufficient for the single line, and the embankments appear to be well made.

In consequence of its being the intention, as I have already stated, to open a further portion of the line in about seven or eight weeks, the Company have not thought it necessary to put up at Harlow a turn-table for the engines, and therefore in one direction the tender will run foremost. Had it not been that the speed is to be very moderate, and that the tenders have six wheels, I should have felt it my duty to protest against this arrangement, but under the circumstances stated I do not consider it necessary to object, but merely to urge that the speed should not be greater than 15 miles an hour for the present on this part of the line.

The whole of the engines, tenders, and carriages on the Northern and Eastern Railway have six wheels and are of a substantial construction. The first-class carriages are fitted up with six seats, in the ordinary manner, and the second-class are covered at the top, and have close boarded partitions, but are open at the sides. The third-class have no seats or roof.

The breaks are applied to the second-class carriage, and each train is accompanied by a conductor and guard, the former being responsible for it.

The characteristic gradient of this part of the line is 16 feet a mile, and on the part already at work about 5 feet a mile; and there are no lofty embankments or deep cuttings on any part hitherto constructed.

The stations are well calculated for the accommodation of the public, but, with the exception of that at Lea Bridge, have the common defect of being approachable on one side only, so that passengers travelling in one direction have to cross the line of rails. The engineer has at Lea Bridge very ably availed himself of the difference of levels between the railway and the turnpike-road which crosses it, to place his station on the level of the road, and it stretches across the railway, with a flight of steps to either side. It would be very desirable that such an arrangement were general on all railways, as it would remove a great source of danger to passengers.

The rails used on the Northern and Eastern Railway are 65 lbs. to the yard, and are laid on cross sleepers, not kyanized, but lying on good ballast well drained.

The permanent way of the line at present open I found in excellent order, and the general arrangements for working it satisfactory.

I enclose a copy of the Code of Regulations.

The goods-waggons are on springs, and are to have spring buffers previous to their running with the passenger-trains.

It is not intended to carry goods until the line is opened throughout, and then I understand they will form part of each train. The goods-waggons and carriage-trucks appear to be of substantial frame-work and of a good construction.

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V.

Reports relating to the Opening of New Lines.

No. 8.
Northern and Eastern.

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No. 8.
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Eastern.

The deviations from the parliamentary line and gradients are unimportant, and seem to have been required in the execution of the work.

The gradients of the new portion of the line are as follows:—

	Chains.
Falling	1 in 330 for 35
Rising	1 in 330 for 25
Falling	1 in 330 for 7
Rising	1 in 330 for 65
Falling	1 in 330 for 31
Rising	1 in 330 for 43
Ditto	1 in 330 for 38

On this gradient the Roydon station is placed:—

	Chains.
Falling	1 in 330 for 7½
Level	18
Rising	1 in 330 for 23
Level	9
Rising	1 in 422 for 30½
Ditto	1 in 478 for 30
Falling	1 in 330 for 11
Level	28½
Rising	1 in 330 for 33½
Ditto	1 in 471 for 27
Level	12
Rising	1 in 388 for 47
Level	8
Rising	1 in 320 for 66

On this the Harlow station is situated.

I have, &c.,
FREDERIC SMITH, Lt.-Col. R. E.,
Inspector-General of Railways.

The Right Hon. Henry Labouchere, M.P.,
&c. &c. &c.

OPENING OF RAILWAY TO HARLOW.

Instructions to Engineman.

ENGINES to work between London and Broxbourne, as heretofore.

One engine only to run between Broxbourne and Harlow.

Engineman to have his steam up by 8 o'clock every morning, to see to his engine being always in proper order.

At all times, until further orders, to take 30 minutes on the trip between Broxbourne and Harlow, including one stoppage at Roydon.

The speed not to exceed 20 miles per hour on any part of the trip.

In case of trains not arriving at Broxbourne at the proper time, the London train to proceed as usual, and no engine is to leave Broxbourne on any occasion to assist the train between Harlow and Broxbourne, in case of delay, until an information has been received of the engine working between Broxbourne and Harlow, having actually broken down, and become unfit for duty.

No. 9.
Birmingham
and Gloucester.

No. 9.

BIRMINGHAM AND GLOUCESTER RAILWAY.

SIR,

Birmingham, August 14, 1841.

PURSUANT to a notice received from the Secretary to the Birmingham and Gloucester Railway, of its being the intention of the Directors of that line to open to the public, on the 17th instant, that final portion which will connect it with the London and Birmingham Railway, I have this day, accompanied by Mr. Bruyeres, the superintendent of the latter railway, and Captain Moorsom, the chief engineer, and Mr. Burgess, the superintendent of the former, inspected the works, and I have the honour to make the following report:—

The Act for the Birmingham and Gloucester Railway was passed in the year 1836, and the works were commenced in the month of November, 1837.

On the 24th June, 1840, the first portion of the line was opened for the public traffic in passengers and goods for a distance of about 30¼ miles, being from Cheltenham to the Bromsgrove Station. The second portion of 5 miles in length was opened from the Bromsgrove to the Cofton Station on the 17th September, 1840. The third portion opened was a length of about 6½ miles on the 4th November, and extended from Cheltenham to Gloucester; and on the 17th December, 1840, a fourth portion, of 9 miles in length, was opened from Cofton to Camphill, which has since that period been the northern terminus of this railway. Its distance by the streets from the joint terminus of the London and Birmingham and of the Grand Junction Railways is about a mile and a-half, and passengers desirous of going to either were exposed to the inconvenience and expense of hiring carriages to convey them thither. But the portion of railway now proposed to be opened, which is about a mile and three quarters in length, will obviate this difficulty; and travellers from Gloucester to London, or to Liverpool, will have no occasion to leave the lines of railway, and in all probability the whole journey will eventually be performed in the same carriages.

The total length of the Birmingham and Gloucester Railway thus appears to be 53 miles, and the length of the London and Birmingham line, over which the Gloucester trains will run to the terminus, is about a quarter of a mile.

It is expected that the present Camphill terminus is to be kept for a minor carriage and engine station, and for those goods not intended to be carried beyond Birmingham.

The junction line leaves that which proceeds to the Camphill terminus at the distance of 400 yards short of the Camphill platform, and passing on the east side of it takes a northerly direction, on a descending gradient of alternate cuttings and embankments till it reaches the level of the rails of the London and Birmingham line, where it sweeps round to the westward on a curved embankment of about 40 feet in height, and 8 chains radius. The length of this descending gradient is about a mile and a half, and its inclination 1 in 84, and it terminates near the curved embankment, where a level of about a quarter of a mile begins, and this level continues up to the junction.

There is in all railway junctions a certain degree of risk, which is much increased when they are formed by one railway running into another, and the safety of the passengers mainly depends on the foresight of those who plan the arrangements for managing the junction, and on the vigilance and steadiness of the persons selected for carrying them into effect.

I enclose a sketch to describe the junction now under consideration, and a copy of the regulations issued by the Gloucester and Birmingham Directors for working it, and I understand that they are in accordance with the views of the managers of the London and Birmingham Railway. By these regulations, which appear to be drawn up with judgment, the Gloucester trains are limited in running down the gradient of 1 in 84 to a speed of 20 miles an hour, and in passing round the curve to the rate of 10 miles an hour. These limitations are in my opinion very proper, and, indeed, will be indispensable, until the line has been worked over for some months, and the curve must always be passed with great care and at a slow speed.

The Gloucester trains are to be stopped at about 70 yards before they reach the London and Birmingham rails. At this point an inspector of the Gloucester Railway is to be stationed, to collect the tickets of the passengers.

At the crossing, a pointsman of the London and Birmingham Railway is to be placed, and when the line is clear towards the terminus, and no train is in sight coming from the direction of London, he is to give a signal to the Gloucester train to enter the Birmingham line, and he will then turn on the red disc by day, or the red light by night, to stop any train that may be coming on the down line, until he is informed that the platform at the terminus has been cleared of the Gloucester carriages.

I have marked on the sketch the position where the London and Birmingham trains are now stopped to collect tickets. This point, you will perceive, is on their own line, and between the point of junction and the terminus.

If these arrangements be properly carried out, there need be no fear of a collision of trains proceeding to Birmingham, but there is not an equal degree of security for the trains leaving Birmingham for Gloucester.

The system proposed is as follows :—The pointsman of the London and Birmingham Company, stationed at the junction, is to be informed of the hours at which the Gloucester trains depart from the Birmingham terminus. At those hours he will exhibit the red signal, in order to stop any train that may approach upon the down line, until the Gloucester train shall have crossed the London and Birmingham rails, and entered upon the Gloucester line.

In fine weather, in the day time, and with proper care, this crossing will take place in perfect safety; but in fogs and in the night, even with ordinary vigilance on the part of the engine-drivers, accidents might happen according to the proposed arrangements; and my Report of the 16th January last will have shown you that entire reliance cannot be placed in negative signals only, of the ordinary kind, in foggy nights, where the junction of two railways is affected. In the case alluded to the collision led to the adoption of an arrangement, by which the trains were required to stop before reaching the crossing; I think that in the present instance the desired safety will be best attained by a similar practice, and I have the less hesitation in proposing it, as it may here be carried into effect without causing any delay to the trains.

I have already stated that the trains from London stop for the collection of tickets between the junction and the Birmingham terminus, a detention for that purpose therefore already takes place. What I propose is merely to remove the point of stoppage to the other side of the junction, by which alteration every down-train would have to stop before reaching the crossing, and then nothing but the grossest neglect on the part of the engine-drivers, or an utter recklessness and disobedience of orders, or a fog so dense as to prevent the driver of a down train knowing when he had arrived at, or was near the junction, could occasion an accident. To provide against the latter cause of danger, I would recommend that in fogs intimation should be given to the drivers of their being within a certain distance, say 200 yards, for instance, of the crossing; and I should think that the fog signal of sounding a whistle by means of a lever screwed to the rail, as proposed by Mr. Bury, of the London and Birmingham Railway, would be, under the circumstances in question, very efficient.

On examining the line on both sides of the junction with Mr. Dockery, the engineer of the London and Birmingham Railway, we found that there would be no practical difficulty in carrying into effect my recommendation, and I would therefore suggest that it should be communicated to the Directors of the last-mentioned Company.

With respect to the state of the works on the portion of line about to be opened, I have to observe that the embankments appear to have been formed for some time, and to be sufficiently consolidated for the safe working of the trains, but of course a certain degree of subsidence may

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still be expected, and as they are lofty, and in one instance of rather a steep slope, it will be the more necessary that their state should be watched for some weeks after the opening. The cuttings stand well, and have been cleared out and properly sloped, with the exception of two places where some soil has been left for the purpose of forming backing to bridges, which the Company are liable to be called upon to build. Captain Moorsom has, however, undertaken that these points shall be carefully observed until the question of the bridges is decided, when, if the soil should not be required, it will be removed without delay.

The fences may be said to be complete, as there is only here and there a panel which has been taken out for the convenience of the workmen, and may be replaced in a few minutes.

The ballasting is in very fair order, and I am informed it is intended to improve it on the day before the opening.

Both lines of rails are laid with the exception of a small portion of the down line, which may be completed in a few hours. Captain Moorsom has on this portion of the railway used some rails weighing 56 lbs. to the lineal yard, and of the same section as he has adopted on other portions of the Gloucester Railway; and these are partly laid on longitudinal bearings, and partly on kyanized cross sleepers of beach, two feet and a-half from centre to centre. He has also used some of Reynolds's patent longitudinal bearers, which I described in my Report on the line between Cofton and Camphill. They were then in some degree experimental on this railway. Captain Moorsom informs me that he has found them to work satisfactorily.

The turnpike and parish-road bridges appear to be well built, and to afford the required accommodation. There are three occupation bridges, however, that the Company are under engagements to construct, of which one only has been commenced. The other two are likely to be the subject of negotiation with landed proprietors, and may possibly not be required. If they should be constructed, the Company should be enjoined to take proper precautions to prevent the passengers along the line being exposed to danger during the progress of these works.

The additional establishment intended to be employed for the working of the junction line consists of one inspector, who will be stationed at the ticket platform, 70 yards short of the crossing, and a pointsman who is to be placed at the Camphill junction.

The points there are at present so arranged as to leave the line open to Camphill. I have suggested to Captain Moorsom that it would be better to reverse this arrangement, as the traffic to Camphill will be much less than to the Birmingham junction, and he purposes adopting this suggestion. The London and Birmingham Railway Company have undertaken to book for the Gloucester Company, and to accommodate their passengers with waiting-rooms, &c.

The carriages are on four wheels and are commodious, and apparently well built. The engines were either manufactured by Mr. Norris, of the United States, or according to his pattern; and Captain Moorsom is of opinion that they will be able to take the trains up the plane of 1 in 84 without the assistance of a bank-engine.

I am not aware of any objection to the opening of the junction line as proposed, and to save time I have made a communication to this effect to Captain Moorsom and Mr. Burgess.

I have, &c.

FREDERIC SMITH, Lt.-Col. R.E.

Inspector-General of Railways.

Right Hon. Henry Labouchere, M.P.,
&c. &c. &c.

LETTER sent to the London and Birmingham Railway Company, with Copy of Lieut.-Col. Sir F. Smith's Report.

SIR,

Board of Trade, Whitehall, August 20, 1841.

I AM directed, &c., to enclose a copy of Lieut.-Col. Sir F. Smith's report upon the junction of the Birmingham and Gloucester with the London and Birmingham Railway, and to request that you will lay the same before the Directors of the London and Birmingham Railway Company, and call their especial attention to the recommendation contained in the report of stopping the down-trains to collect tickets before arriving at the point of junction.

I am, &c.

S. LAING.

The Secretary of the
London and Birmingham Railway Company.

LETTER sent to the Birmingham and Gloucester Railway Company, with copy of Lieut.-Col. Sir F. Smith's Report.

SIR,

Board of Trade, Whitehall, August 20, 1841.

I AM directed, &c., to enclose a copy of Lieut.-Col. Sir F. Smith's report upon the portion of the Birmingham and Gloucester Railway recently inspected by him, and upon the arrangements for working the junction with the London and Birmingham Railway.

I am, &c.

S. LAING.

The Secretary of the
Birmingham and Gloucester Railway Company.

SIR,

Office, Euston Station, September 4, 1841.

REFERRING to your letter of the 11th inst., I have now to hand you the enclosed copy of one from the Company's superintendent, Mr. Bruyeres, respecting his proceedings for giving effect to your suggestions.

Lieut.-Col. Sir F. Smith,
&c. &c. &c.

I have, &c.

R. CREED, Secretary.

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DEAR SIR,

Camden Station, August 26, 1841.

I HEREBY return you Sir F. Smith's letter of the 11th inst. relative to regulations to be observed at the junction of the Birmingham and Gloucester Railway.

Instructions have been issued to the servants of the London and Birmingham and Birmingham and Gloucester Companies accordingly; and, further, the ticket-collection platform, now upon the viaduct, has been ordered by the Coaching Committee to be removed south of the junction, so that all down-trains will stop previous to crossing the junction.

I have also, in conformity with your letter of the 14th inst., conferred with Mr. Bury on the subject; and I am enabled to state that he is now preparing several of the engines with the necessary apparatus for the fog-signals.

I have, &c.

H. P. BRUYERES.

R. Creed, Esq.,
&c. &c.

No. 10.

BRIGHTON RAILWAY.

REPORT of Lieut.-Col. Sir Frederic Smith on the opening of the Brighton Railway, from Hayward's Heath to Brighton.

MY LORD,

Brighton, September 11, 1841.

IN pursuance of your Lordship's instructions of the 9th inst., I have this day inspected that portion of the London and Brighton Railway which the secretary to the Company, in his notice to the Railway Department, stated it to be the intention of the Directors to open to the public on the 14th inst.

The total length of railway, from the London Terminus of the Greenwich Railway to the Terminus at Brighton, is about 50 miles and 50 chains, of which distance 41 miles and 30 chains belong to the Brighton Company, and the remaining distance to the Greenwich and to the Croydon Companies.

In my report, dated the 10th July last, to which I beg to call your Lordship's attention, I described the then state of that portion of the London and Brighton Railway, extending from the junction with the Croydon Railway to Hayward's Heath Station, (a distance of $28\frac{1}{2}$ miles,) and I shall, in the latter part of this report, give my opinion as to its present very satisfactory condition; but I shall, in the first instance, lay before your Lordship an account of that division of the line now proposed to be opened, which is 12 miles and 70 chains in length.

The gradients, commencing from Hayward's Heath, are as follows:—

									Mls.	Chains.
Falling at the rate of 1 in	317	.	.	.	.	.	.	.	2	40
Rising	"	1 in	264	.	.	.	.	.	1	0
Rising	"	1 in	1320	.	.	.	.	.	1	40
Rising	"	1 in	264	.	.	.	.	.	3	0
Level	.	.	.	.	.	.	.	.	0	5
Falling	"	1 in	264	.	.	.	.	.	4	65

Total distance from Hayward's Heath to Brighton . . 12 70

I may here observe that the railway gradient on the Brighton Railway is 1 in 264. The longest plane of that inclination is 8 miles, being a rise from the Croydon Junction to the first summit, at the north end of the Merstham Tunnel. Here the line is 312 feet above the level of the datum, which is Trinity high-water mark. The fall at the south end of the tunnel is of a similar inclination, and extends for 7 miles.

The second summit is only 284 feet above the datum level. This is at the north end of Balcombe Tunnel, and here two planes of 1 in 264 meet; the rise to this point being $4\frac{1}{2}$ miles, and the fall to the south $5\frac{1}{2}$, passing through the Balcombe Tunnel, and over the Ouse Viaduct.

With respect to the portion of the line proposed to be opened, I have to acquaint your Lordship that, with a very few exceptions, it is in a fit state for the public traffic; and as I find that it is now intended to defer the opening till the 21st inst., and as there will be no difficulty whatever in completing the whole of the works that are still unfinished some days before that time, I am of opinion that your Lordship's sanction may be given for the opening taking place on the day named, provided that, in the mean while, an assurance is given by the Directors of the Company that the works in question, and which I am about to notice, have been completed, or that the precautions I shall suggest have been or will be taken.

The works of primary importance on this division of the railway, proceeding southwards, are, first, the Hayward's Heath Tunnel, of 224 yards in length, and the long cutting to the

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south of it. There remains 100 yards of the culvert to form in the bottom of the tunnel; and both lines of rails have still to be laid in the tunnel.

The slopes of the cutting are not quite trimmed off; but all these operations may be completed without any difficulty by the 17th or 18th inst.

The "Folly-lane" cutting has to be crossed by a very lofty parish-road bridge of three arches. The piers have been carried up to the springing; but as the arches are not yet turned, I have to suggest that a policeman should be stationed at that point, to see that the workmen engaged in building this bridge place no obstructions in the way of the free passage of the trains.

The second work of importance is the "Vale-pool" Viaduct. This structure, which is of brickwork, consists of eight semicircular arches of 30 feet span. The piers at the springing are 5 feet thick, battering on either side in the proportion of 1 foot in 48, and on each face 1 foot in 24. The total height from the rails to the surface of the water is 60 feet, and from thence to the bottom of the centre pier about 18 feet. This viaduct, although inferior in magnificence and beauty to that over the Ouse, is a very fine piece of brickwork, and shows no symptoms whatever of settlement.

The embankment which joins the south end of this viaduct is not fenced from the public road running at the foot of it. It is essential, for the safety of the public, that this should be done; and I would here observe that your Lordship should have a special certificate that the whole of the fences on the entire line are completed before the opening.

The next work deserving of particular attention is the Hassock's-gate Embankment, which is upwards of a mile in length. Owing to its having been formed of clay, there have been several extensive slips in it. One of these is not yet thoroughly made up; but Mr. Rastrick, the chief engineer of the line, in order to guard against the inconvenience of subsidence in the winter, is taking the precaution of cutting out the treacherous material, and substituting dry sand, tied together and drained by occasional layers of brushwood. I think it right here to make a remark applicable not only to this, but to all the other embankments on the London and Brighton Railway, that great care appears to have been taken by giving an extraordinary width to these masses to increase the safety of the traveller.

I now come to the Clayton Tunnel, which is 1 mile and 20 chains in length, and rises to the south at an inclination of 1 in 264. This tunnel, as well as that at Hayward's Heath, is retained by brickwork, and, so far as can be ascertained by the inspection of such works after their completion, they appear to be sound and substantial.

I am told that it is the intention to light the Clayton Tunnel with gas, in the manner adopted with respect to the Merstham and Balcombe Tunnels, an arrangement which gives great satisfaction to travellers.

The Clayton Tunnel is followed by a chalk cutting of upwards of a mile and a-half in length, and of the extreme height of 70 feet. The slopes of this cutting are trimmed off in the most satisfactory and creditable manner; but the fencing at the top is incomplete, and demands immediate attention.

At a short distance beyond the south end of the Clayton Cutting the Patcham Tunnel occurs. This being only 480 yards long, does not require to be lighted. The plane falling at the rate of 1 in 264, which commences at the south end of Clayton Tunnel, is $4\frac{1}{4}$ miles in length, and brings the line down to the Brighton Terminus, which is situated to the westward of the new church.

The Brighton Station appears to be likely to afford every convenience that can be required for the extensive passenger traffic that may be expected here.

There are spacious waiting-rooms as well as distinct booking-offices for first and second-class passengers for the London Line as well as for the Shoreham Branch; and the whole of the platforms and spaces under which the carriages are to stand are covered with a roof of elegant design. Indeed the whole of the arrangements at the terminus, as well as at the stations on the line, evince liberality on the part of the Directors, and reflect great credit on the taste and skill of the engineer and architect of the Company.

In my report of the 10th July I gave a list of the stations up to Hayward's Heath; those to the south of that point are as follows:—

Burgess Hill, at St. John's Common, about $3\frac{1}{2}$ miles from Hayward's Heath.

Hassock's Gate, about $2\frac{1}{2}$ miles from Burgess Hill.

I will now make a few observations on the northern division of the line, on which I reported on the 10th July last.

In the first place I will advert to the points which require the attention of the Company.

The safety of the public requires that the Godstone Station should be fenced in from the public road.

The embankment south of the Balcombe station, being lofty, and having formerly slipped, should be carefully watched by a policeman, or other competent and careful person, during the winter, and until all appearance of subsidence shall have ceased. This precaution should be taken also on all the other lofty embankments of the line.

The recent serious accident which occurred on another railway in consequence of the sudden subsidence of an embankment, has shown that where embankments are formed with treacherous soil, the precautions I have suggested are essential to the safety of the public.

It is very satisfactory to me to bear testimony to the admirable state of the permanent way throughout the whole length of the Brighton Railway to Hayward's Heath.

Any velocity that can with safety be used on other railways of similar gradients may now be adopted on this part of the line; but until the portion which is about to be opened shall have been used for a few weeks, the rate of speed should, for the safety of passengers, be much more moderate, and I think it should be limited during the first week to 20 miles an hour.

I cannot conclude without observing that every facility was afforded to me for my inspection by the Chairman and Deputy Chairman, and by Mr. Rastrick, the engineer of the Company, all of whom accompanied me along the line, which, with the exception of the Hayward's-Heath Tunnel, I passed over with a train of carriages.

The Earl of Ripon,
&c. &c. &c.

I have, &c.

FREDERIC SMITH, Lt.-Col. R.E.,
Inspector-General of Railways.

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No. 10.
Brighton.

LETTER sent to the London and Brighton Railway Company, with Copy of Lieut.-Col. Sir Frederic Smith's Report on the opening of the Line.

SIR,

Board of Trade, Whitehall, September 14, 1841.

I AM directed, &c., to enclose a copy of Sir F. Smith's report on the Brighton Railway, and to request that you will lay the same before the Directors of the London and Brighton Railway Company, and call their especial attention to the suggestions contained therein.

I am further directed to state that their Lordships will be prepared to assent to the opening of the line on the 21st instant, on condition of receiving before that day a certificate from the engineer of the Company to the effect that the whole of the fences on the entire line have been completed; that the other works alluded to by Sir F. Smith, as remaining unfinished, have been completed; and that the precautions suggested for ensuring the public safety on the "Folly-lane" cutting, and upon the embankment south of the Balcombe station will be taken by the Company.

I am, &c.,
S. LAING.

The Secretary of the
London and Brighton Railway Company.

IN reply to Letter from this Office of the 14th instant, transmitting Copy of Sir Frederic Smith's Report on the opening of the Line.

SIR,

10, Angel Court, Throgmorton Street, September 16, 1841.

I BEG to acknowledge the receipt of your favour of 14th instant, concerning the report of Sir F. Smith to the Earl of Ripon on the state of the railway of this Company, which has been laid before the Board of Directors, and I am instructed to convey to you, for the information and satisfaction of the Lords of the Committee of Privy Council for Trade, their deep sense of the importance of the suggestions contained in Sir Frederic Smith's report, and to which they have, in an especial manner, called the earnest attention of Mr. Rastrick, from whom their Lordships will receive, previous to the 21st instant, a certificate that they have all been strictly and properly complied with; and that, with the assurances of the Board to the same effect, it will be concluded that no impediment will exist to the opening the line on the 21st, as proposed.

I am, &c.,
JOHN WOOD, Secretary,

S. Laing, Esq.,
&c. &c.

IN reply to Letter from this Office of the 14th instant, with Copy of Sir Frederic Smith's Report on the opening of the Line.

MY LORD,

Brighton, September 20, 1841.

IN compliance of the requirements of Sir Frederic Smith, in his report on the London and Brighton Railway, on the 11th September, 1841, I have now the honour to certify to your Lordship that the Godstone Road Station has been fenced in ever since the opening of the first portion of the line in July last. But at the time Sir Frederic Smith saw it on his late inspection, a short length of rails had been taken out to bring in some materials for the road, and these rails were all put up again in the course of the same day.

I have also the honour to certify to you that the fencing is all done, except a few places left open to get the materials from off the line, and these will all be closed before night.

I believe these are the only two points in Sir Frederic Smith's report that it is necessary for me to advert to.

I am, &c.,

The Earl of Ripon,
&c. &c. &c.

JOHN H. RASTRICK, Engineer-in-Chief.

LETTER sent to the London and Brighton in reply to their Letter of the 20th instant, relative to the opening of the Line.

SIR,

Board of Trade, Whitehall, September 21, 1841.

I AM directed, &c., to acknowledge the receipt of Mr. Rastrick's certificate, dated Brighton, the 20th instant, which is satisfactory as regards the completion of the fencing. An assurance from the Directors that the other suggestions contained in Sir F. Smith's report (especially those which relate to precautions to be taken at the "Folly Lane bridge" and

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upon the "Balcombe embankment") have been complied with, is still required, in order to meet the conditions prescribed by their Lordships in sanctioning the opening of the line.

The Secretary of the
London and Brighton Railway Company.

I am, &c.,
S. LAING.

IN reply to the Letter from this Office of the 21st.

SIR,

Angel Court, Throgmorton Street, September 23, 1841.

I BEG to acknowledge the receipt of your favour of the 21st instant, and to acquaint you that the omission of forwarding to the Lords of the Committee of Privy Council for Trade the assurance of the Directors that the suggestions of Sir Frederic Smith had been complied with, arose from my concluding that such assurance had been forwarded, together with Mr. Rastrick's certificates from Brighton, where a committee on the subject was assembled. I have therefore now to assure their Lordships that all the suggestions contained in Sir Frederic Smith's report had been complied with previous to the opening of the line on Tuesday 21st instant.

I am, &c.,

S. Laing, Esq.,
&c. &c.

JOHN WOOD, Secretary.

No. 11
Stockton and
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No. 11.

STOCKTON AND HARTLEPOOL RAILWAY.

REPORT of Lieutenant-Colonel Sir Frederic Smith on the Stockton and Hartlepool Railway.

MY LORDS,

Board of Trade, Whitehall, September 6, 1841.

IN conformity with your Lordships' instructions I have inspected the Stockton and Hartlepool Railway, on which I have to submit the following report:—

This railway, which has not been constructed in pursuance of any Act of Parliament, is the property of a company of gentlemen, who undertook its formation on the mere consent of the proprietors of the land through which the line of railway passes. It was commenced in 1839, and opened for the public traffic in passengers and merchandize in 1840.

The entire railway distance between Stockton and Hartlepool is about 13 miles; $4\frac{1}{2}$ miles of that distance belong to the Clarence Railway, and the remaining $8\frac{1}{2}$ miles have been constructed at the cost of the gentlemen above alluded to, who having now determined to apply for an Act of Incorporation in the ensuing session of Parliament, have requested your Lordships to authorise an inspection of their works.

I shall at the present moment confine myself to a description of this part of the Stockton and Hartlepool Railway, merely observing, with reference to the Clarence Railway, that the offices at Stockton used by the Stockton and Hartlepool Company, and the accommodation provided for passengers for both Companies, are in a building erected at the cost of the last-mentioned Company on the premises of the Clarence Company.

The junction of the Stockton and Hartlepool Railway with the Clarence Railway, takes place at about four miles and a half from Stockton, at a point in the township of Billingham.

The railway crosses on a level the roads from Billingham to Cowpen, and from Wolviston to Cowpen; the former crossing being about five miles and a quarter from Stockton, and the latter five miles and three-quarters from that place. Another level crossing occurs at the Greatham station, seven miles and a half from Stockton. At each of these crossings a lodge has been built for a gatekeeper, who is stationed there.

Within about a mile of Hartlepool a parish road is crossed, and there also a gatekeeper is placed.

The gradients of that part of the Clarence Railway used by the Stockton and Hartlepool Company are as follows:—

First, between Stockton and the Norton Junction,—

		Miles.	Chains.	
Length	. . .	0	46,	rising 1 in 170.
"	. . .	1	0,	" 1 in 214.
"	. . .	0	71,	" 1 in 115.

Second, from the Norton Junction to the Junction with the Hartlepool Railway,

		Miles.	Chains.	
Length	. . .	2	3,	rising 1 in 240.

From the junction with the Clarence Railway to Hartlepool, the gradients are as follows:—

		Miles.	Chains.	
Length	. . .	1	45,	falling 1 in 341.
"	. . .	3	40,	horizontal.
"	. . .	0	40,	falling 1 in 3087.
"	. . .	1	0,	falling 1 in 440.
"	. . .	0	73,	horizontal.
"	. . .	0	75,	falling 1 in 1715.
"	. . .	0	15,	rising 1 in 788.

Your Lordships will observe from this statement, that the new railway has very superior gradients to those of the Clarence Railway.

There are no important works on this railway, excepting a brick viaduct of about 700 yards in length. The height of the rails above the surface of the ground is 22 feet, the piers are 3 feet in thickness, and are supported on piles of about 60 feet in length; the arches are of a semicircular form, of 18 feet span.

I am informed that this viaduct was finished in about three months from the date of its commencement.

There are no curves on this line of less radius than half a mile, and they are therefore unimportant.

The rails are of the H form; they weigh 63 lbs. to the lineal yard, and are placed on the cuttings and on the low embankments, chiefly on transverse sleepers, with bearings of three feet apart, and on the high embankments on kyanised longitudinal timbers. The cross sleepers are not kyanised. The joint chairs weigh 27 lbs. each, and the intermediate chairs 17 lbs. each. The former are secured to the sleepers by three spikes five-eighths of an inch in diameter, and seven inches long, and the middle chairs by two spikes of the same dimensions.

The embankments appear sufficiently consolidated, the cuttings are properly trimmed and cleared, and the line is throughout well ballasted and drained.

The fences are, with some slight exceptions which I pointed out to the engineer of the line, in very good order, and I consider the whole of the works in a condition calculated to ensure the safety of the traveller.

At the village of New Stranton, which is about one mile from Hartlepool, a bridge has been formed for carrying the railway over a road which leads to the sands. This bridge is too low to afford head-room for carriages to pass under, but I am disposed to think that on the whole the convenience of the public has been rather increased than diminished by the Stockton and Hartlepool Railway Company, who, in limiting the use of the very indifferent road in question, have substituted a very good carriage-road at the back of the village. This road crosses the railway on a level at a point near to Hartlepool, and here a gatekeeper is stationed. Had the local authorities disapproved of the operations of the Company in this quarter, it was of course in their power to have opposed them, and therefore it is fair to presume that the works were duly sanctioned, and indeed the solicitor of the Company informed me that such was the case.

During my inspection I observed a great remissness on the part of the gatekeeper at this crossing, which I pointed out to the solicitor and engineer of the Company, and these gentlemen promised that orders should be given to ensure greater attention to the public safety.

The traffic is not entirely confined to passengers, as various articles of merchandize are carried on this line.

The carriages are of the ordinary description, apparently well-built and on four wheels. The engines have six wheels.

In conclusion, I beg to acquaint your Lordships that I consider this railway a great convenience to the district in which it is situated, and that it merits the favourable decision of the Legislature when the Act is applied for.

I have, &c.,
FREDERIC SMITH, Lt.-Col. R. E.
Inspector-General of Railways.

To the Lords of the Committee of
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EDINBURGH AND GLASGOW RAILWAY.

REPORT of Lieutenant-Colonel Sir Frederic Smith on the Edinburgh and Glasgow Railway,
relative to the Opening of the Line.

MY LORD,

Glasgow, September 26, 1841.

THE Directors of the Edinburgh and Glasgow Railway Company having given notice of their intention to open the whole, or the greater portion of their line for the public traffic, on or shortly after the 27th instant, I have, with the view of ascertaining to what extent it may be proper to sanction the proposed opening, carefully examined the works, and I shall have the honour of reporting my opinion of their state after giving your Lordship a general description of this railway.

The royal assent was given for the incorporation of the Edinburgh and Glasgow Railway Company on the 4th of July, 1838, and the works were commenced early in the ensuing year.

The length of the line is 46 miles, and the present termini are at the Haymarket, Edinburgh, and in Queen Street, Glasgow, but it is in contemplation to continue the line eastward, as far as the North Bridge, where it will be placed in connexion with the railway now in progress between that point and the sea at Newhaven or Trinity, and also with the proposed railway to Dunbar. The Edinburgh and Glasgow Railway passes through Linlithgow, about half a mile to the south of Falkirk, a mile to the north of Cumbernauld, and a mile south of Kirkintilloch, to which last-mentioned place, from its being in a populous district, it is proposed to form a branch, and plans have been lodged with the sheriff clerks, not only for this branch, but also for the extension to the North Bridge.

The principal or first-class road stations are Linlithgow, Falkirk, and Cumbernauld, and the second-class stations are Corstorphine, Ratho, Winchburgh, Polmont, Croy, Kirkintilloch, and Bishop-Brigs.

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The gradients from the Haymarket, Edinburgh, to the Glasgow incline, do not at any point exceed six feet a-mile, or one in 880, but this advantage has been obtained at a great cost in construction.

The incline is 1 in 43, falling towards Glasgow for 2077 yards.

The detail of the gradients is as follows:—

Miles.	Furlongs.	Yards.	Beginning at Edinburgh.	Rate of Inclination.
..	7	60	Falling	1 in 1200.
..	..	67	Level.	
5	3	139	Rising	1 in 960.
..	5	200	Ditto	1 in 2000.
5	6	80	Ditto	1 in 880.
4	7	140	Falling	1 in 880.
..	2	214	Level.	
5	4	..	Rising	1 in 880.
6	6	80	Level.	
2	7	140	Rising	1 in 1200.
..	4	20	Ditto	1 in 880.
2	2	140	Falling	1 in 880.
2	7	185	Ditto	1 in 900.
..	..	167	Level.	
..	5	100	Falling	1 in 1200.
..	6	180	Level.	
3	6	..	Falling	1 in 900.
..	..	187	Level.	
..	6	..	Falling	1 in 41.
..	3	85	Ditto	1 in 43.
..	1	40	Level.	
46	1	26		

The deepest open cutting on this line is in clay, it is 75 feet, and has slopes of $1\frac{1}{2}$ to 1. The deepest rock cutting is 65 feet, in Whinstone with slopes of $\frac{1}{2}$ to 1.

The width of the formation in the cuttings is 30 feet, on the embankments 33 feet, and in the tunnels 26 feet.

The highest embankment is 58 feet with slopes of 2 to 1.

The tunnels, commencing at Edinburgh, are 1st, the Winchburgh, which is 367 yards long and 20 feet high above the top of the rails.

2nd. The Falkirk, 830 yards long.

3rd. The Glasgow, 1148 yards long.

This tunnel is divided into three portions, connected by open cuttings, each 40 feet long.

This tunnel forms part of the Glasgow incline, which is to be worked by stationary power, and the electrical telegraph is to be used in giving notice to the person in charge of the fixed engines of the time when he is to put his machinery in motion; it is expected that this telegraph will also be useful in making communications from the passenger-terminus in Queen Street, to the superintendent who will be in charge of the depôt of engines, and the workshops at the top of the incline.

There are seven viaducts on this railway:—

That over the Almond consisting of 36 arches of 50 feet span, with piers 7 feet wide.

This viaduct is built on a curve of $1\frac{1}{2}$ mile radius.

That over the Broxburn of seven arches, the centre arch having a span of 66 feet, and the span of the other arches being 50 feet. Its height is 60 feet.

That over the Avon, which has 20 arches of 50 feet and 3 of 20 feet. Its extreme height is 92 feet.

That over the Canal, consisting of 2 of 20, 2 of 16, 1 of 63, and 1 of 130 feet, the last being a segment arch of 24 feet rise. It is from 36 to 48 feet high.

That over the Redburn which has eight arches of 50 feet span. The extreme height is 90 feet.

The whole of these viaducts are built of ashlar and have hollow piers, cavities of 2 feet being left in the centre of each.

The width between the parapet walls is 22 feet, and recesses of 1 foot deep are made over each pier, as places of safety for workmen on the line at the time trains are passing. These recesses also give a projection, which adds to the beauty of the structure.

The sixth viaduct carries the railway over the Moss Water, and consists of four arches each of 30 feet span. It is 44 feet in height.

The seventh viaduct is over the Kirkintilloch Railway; this viaduct has 1 arch of 44 feet span, 3 of 30, and 1 of 15 feet. It is from 33 to 48 feet in height.

These like the five first-mentioned viaducts are built of ashlar, but the former has no recesses over the piers.

The station-houses at the termini are not yet finished, but they are so designed as to afford all the accommodation that can be required by the public. I enclose drawings descriptive of these buildings, and showing the lines of rails and the position of the sheds.

The intermediate station-houses are also still unfinished, but those at Ratho, Linlithgow,

Palmont, Falkirk, and Cumbernauld are in so forward a state, that they will be ready for the passenger-traffic in a few days.

The gauge of this railway is 4 feet 8½ inches, and the interval between the "up and down" lines of rails is 6 feet.

The rails weigh 75 pounds to the lineal yard, and are laid with 4 feet bearings on cast-iron chairs, pieces of felt being placed between the chair and the rail.

The joint chairs weigh 28 pounds each, and the intermediate chairs 22 pounds; every chair being secured to the stone block or sleeper on which it rests by two spikes 7½ inches long and ¾ of an inch in diameter.

In the cuttings, the chairs are placed on Whinstone blocks, each containing 4 cubic feet, and varying from 11 to 12 inches in depth; on the embankments the chairs are fixed on transverse sleepers of larch 9 feet long; those for the joints being 12 inches wide, and for the intermediate bearings 10 inches wide; on the viaducts, and across some mosses which occur on this railway, the rails are laid on longitudinal sleepers 12 inches wide and 6 inches deep, and these again rest on cross sleepers of the dimensions above given.

The fences throughout the whole line are formed of dry stone walls, with a coping set in mortar, excepting over the mosses, where wooden rail fences have been adopted.

In passing all the mosses excepting the Drumshanty, the peat has been cut entirely out, and the space filled up to the proper level with hard materials, but the Drumshanty moss was crossed by means of a formation of dry turf, on which layers of brushwood and sand were placed.

After a careful inspection of the whole of the works of this railway, I am enabled to state, that those which are finished are of a substantial and satisfactory character, but I find, that with the exception of about 9 miles, at the Edinburgh end of the line, and about 22 miles near the middle of it, they are not sufficiently advanced to admit of the railway being opened for the public traffic.

In a few weeks, however, the gap which intervenes between these portions of the railway will be completed, and about 34 miles of it might then be brought into operation, but I do not think from the present appearance of the works, that the whole line can be opened before the middle of November.

There is no line in the kingdom which possesses so great a number of beautiful pieces of masonry as the Edinburgh and Glasgow Railway, and the whole of the bridges and viaducts appear to have been constructed with great care. There are some for the passage of the railway over carriage roads, in which iron girders have been used. Mr. Miller, the chief engineer of the line, who accompanied me in my inspection, stated, that he had tested the whole of these girders with four times the weight that they can be required to bear, and therefore I conclude that they will be found of ample strength.

The cuttings and embankments seem to have been well formed and consolidated, and I have seen few instances of a line being so well ballasted previously to an opening as those portions of this railway which are finished; and with the view to supersede the necessity of another inspection of the works before the final opening, Mr. Miller has undertaken to put the whole in the same condition as the parts which I have approved.

I have great satisfaction in being able to state, that on the whole length of this railway there are only six crossings on the level of the rails, and that not one of these is for a turnpike or parish road, the Company having gone to the expense of constructing bridges for all these crossings.

The secretary and engineer have both informed me that they are negotiating to close three of the crossings above alluded to, and that the other three, being merely what are termed occupation crossings, will be seldom used, and gates are put up, which are to be kept locked by the land-owners.

I may here remark, that the Act of Parliament enables the Company to compel land-owners to keep their gates shut, but they have not the power to require them to be locked.

It is the intention of the Company to light the Glasgow and Falkirk tunnels with gas, and all their arrangements for providing the stations and carriages with lamps are satisfactory.

Engines both with four and six wheels are to be used, and every carriage is to be supplied with spring buffers.

Every second carriage is to have breaks of a superior description and two guards are to accompany each train.

I have examined the manuscript Code of Regulations, and with few exceptions, I consider them satisfactory. But both these and the bye-laws should be submitted for further consideration before they receive your Lordship's sanction.

The Directors of the Company should be requested to furnish also a time-table showing the number of trains proposed to be run, their hours of departure and of stopping at the various stations, and the amount of the fares intended to be charged; and it should be specified whether the third-class passengers are to be carried with mixed trains or with the luggage. If the latter, your Lordship should be informed, not only in what part of the luggage-train these passengers are to be placed, but also how long they are to be kept upon the journey.

The third-class carriages are of two kinds, some with and some without seats, and it was stated to me that the former are intended to be used for the slower trains, in order that the passengers might be less inconvenienced by a tedious journey.

I have requested Mr. Miller to supply me with a list of the establishment to be employed in working the line, and on the receipt of this document I shall have the honour of laying it before your Lordship, with any observations I may have to make upon it.

I am not aware that there has been any deviation from the provisions of the Act of Par-

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liament for this railway, excepting in the Glasgow Tunnel, which it has been found expedient to lengthen about 50 feet, and to this alteration I see no objection.

The Act stipulates, however, that at certain points walls, if required, are to be built to screen the railway from adjoining carriage roads; and as no such screens have been formed, I called upon Mr. Miller to acquaint me with the intention of the Directors on this head, and I enclose Mr. Miller's answer, from which your Lordship will perceive that the Company do not feel bound to erect these screen walls, unless under an order of the sheriffs of the counties, where such parts of the railway are situated, and it appears that no such order has been given.

I found, in the course of my inspection, that the other stipulations of the Act which come under the supervision of the Railway Department have been fulfilled in the manner set forth in Mr. Miller's letter.

I enclose a sketch of the Falkirk station-house, which may be taken as a sample of the other establishments of this nature on the Edinburgh and Glasgow Railway. These buildings afford sufficient accommodation for those passengers who are to arrive at, or depart from the same side of the railway; but on the opposite line, there is no building, shed, or shelter of any kind provided for passengers, and therefore those who are to depart by trains which stop on that side will, in wet or inclement seasons, be exposed to the weather if they should cross the rails before the arrival of the trains. This would naturally cause the passenger to defer crossing till the latest moment that it might be considered safe to do so, and unfortunately we are not without instances of the fatal consequences of such a course. I would therefore recommend that either sheds should be built opposite to the station-houses, and orders given that persons should cross the rails in time to avoid the possibility of danger, or else that they should be prohibited from crossing until after the train shall have stopped. This latter, though it may cause some slight detention to the train, is much the safer arrangement.

On reaching the Edinburgh Station, the trains are to stop short of the buildings, and while the tickets are being collected there, the engine will be detached and got behind the train; it will then be gently propelled to the platform. I have approved of this arrangement as being the best calculated for the public safety in this situation. On arriving (from Edinburgh) at the top of the Glasgow incline, the engine is to be detached and to proceed to the engine-house; the tickets are then to be collected, and in the mean while a break-carriage is to be connected to the hinder carriage of the train. This break-carriage, of which I enclose a drawing, is to be under the guidance of a bank-rider or breaksman, whose sole duty it would be to regulate the speed of the various trains down the incline by means of powerful breaks. As the carriage itself is only expected to weigh two and a half tons, it would be deficient in weight to be the only dependence for checking the speed of the train acquired by the force of gravity, but the break-carriage will be attached to the rope used in drawing the trains up the incline, and therefore may be rather considered as a check on the person in charge of the stationary engine, and by whose neglect the train might acquire a fearful velocity unless corrected by the break-carriage.

To guard however against such an accident as would result from the sudden breaking of the rope, I would recommend that the usual guards of the train should go down upon their ordinary break-carriages, to be enabled to assist the bank-rider in case of necessity.

It is proper, I should observe, that had it not been for the interruption which the workmen have received from the continued wet weather during the last month, the whole of the railway, with the exception of about three miles, might have been finished by this time, and therefore I acquit the Company of having prematurely called for an inspection of their works.

There are two points when completed that will require to be worked with great care, these are the embankments adjoining the west end of the Almond viaduct, and another lofty embankment between Falkirk and Glasgow, for owing to the rapid manner in which these masses are being formed, considerable subsidence may be expected in the course of the ensuing winter.

The Earl of Ripon,
&c. &c.

I have, &c.,
FREDERIC SMITH, Lt.-Col., R. E.,
Inspector-General of Railways.

SIR,

Glasgow, September 26, 1841.

WITH reference to the memorandum put into my hands to-day, I beg to state,

That there has been no deviation from the Act, inasfar as it respects levels, arches, and tunnels, except at the south end of the brickwork portion of the Glasgow tunnel. It has been lengthened 50 yards; and notice for an amended Act has been given, which will embrace this extension.

That there has been no deviation as to curves.

That there has been no screen erected on any part of the line, but that such will be erected, provided the sheriff of the respective counties through which the line passes should order it on hearing parties.

That the bridge over the Monkland and Kirkintilloch Railway has been erected of the specified dimensions.

That all public carriage, tram, or horse roads cut through, or otherwise injured, have been restored, or new roads equally convenient provided. As already mentioned, no screens have been erected, but such will be if ordered by the sheriff on hearing parties.

That no turnpike road or public carriage-way has been crossed on the level, and this provision has been by the Company extended to occupation roads also.

That the width and height and construction of bridges for roads have been adhered to; and that the approaches have been made as convenient as formerly.

That public footpaths, as well as private ones, have been carried across by bridges.

That the railway has been, or is being, fenced with stone walls, except through mosses, where post and rail are adopted; this fence is three-barred.

That there has been no branch communication made.

That the rates and tolls have not yet been fixed, but boards with the rates and tolls painted thereon will be affixed on all toll-houses.

That no regulations for the passage of the railway have yet been made.

Lt.-Col. Sir Frederic Smith,
&c. &c. &c.

I have, &c.
J. MILLER.

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LETTER sent to the Edinburgh and Glasgow Railway Company, relative to inspecting the remaining portion of the line previous to opening. Also transmitting an Extract from Sir F. Smith's Report.

SIR,

Board of Trade, Whitehall, October 5, 1841.

I AM directed, &c., to enclose an extract from Lt.-Col. Sir F. Smith's report on the Edinburgh and Glasgow Railway, and to state that as regards the portion of the railway which was finished at the date of Sir F. Smith's inspection, their Lordships see no objection to the opening, but that another inspection will be necessary to ascertain the completion of the remaining portion. Their Lordships therefore request that due notice may be given of the final completion of the works; and in order to avoid the inconvenience which arises from works not being completed at the period fixed for inspection, their Lordships will require a certificate from Mr. Miller that he has every reason to believe that in one week from that date the whole of the line proposed to be opened will be sufficiently completed for conducting the public traffic thereon in safety, before they give instructions to an inspector to examine the remaining portions of the line.

I am further directed to call the especial attention of the Directors to Sir F. Smith's recommendations relative to the Falkirk station, the working of the Glasgow incline, and the precautions to be observed on the newly formed embankments.

The Secretary of the
Edinburgh and Glasgow Railway Company.

I have, &c.
S. LAING.

No. 13.

ULSTER RAILWAY.

REPORT from Lieutenant-Colonel Sir Frederic Smith, stating that the Ulster Railway was not ready for inspection.

MY LORD,

Port Patrick, September 30, 1841.

THE Ulster Railway Company having given notice of their intention of opening to the public a further portion of their line on the 4th of next month, I came here this evening, on my way to Belfast, to make the inspection ordered by your Lordship; but on my arrival I received the enclosed letter from the engineer, by which I perceive that his works are still in a very unfinished state.

In nearly all the inspections I have made it has been my fate to find that the engineers had very much miscalculated the time required for the completion of their railways, and I have generally been in consequence obliged either to repeat my inspections of the same lines, or to require from the engineers a pledge that the works at which I took exception, were, before the opening, put into such a state as I considered necessary for the public safety.

As your Lordship is aware, the powers of the Railway Department of the Board of Trade are derived solely from Lord Seymour's Act, and I believe it does not give the Government the means of preventing our being thus trifled with by Railway Companies. This state of things brings great discredit on those charged with the responsibility of the public safety, and cripples their efforts to promote the security of railway travelling, and I therefore earnestly hope that your Lordship will direct that, in the early part of the ensuing session, a Bill may be introduced, much on the principle of that which was dropped on the dissolution of the last Parliament. The object of that Bill was to remedy the defects of Lord Seymour's Act, and to extend the powers of the Lords of the Committee in railway matters; and, subject to the alterations proposed by the Select Committee of the House of Commons, I think it would have passed into law, much to the advantage of the public, and, I believe, without much opposition from the more important Railway Companies.

As a proof the necessity of compelling the Railway Companies to fix a day for their inspections on which there can be no doubt of their works being completed, and therefore causing no improper delay to the inspector-general, I need only mention that in the ensuing month there are notices for *four* inspections. The Ulster, the Gosport, the Northern and Eastern, and the Manchester and Sheffield. If either should alter the dates proposed for the inspections, not only would great inconvenience be caused to your Lordship's Department, but in all likelihood, also, to one or all of the other Companies.

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If I were now, for instance, to comply with the wish expressed by the engineer of the Ulster Company, to postpone my inspection for a week or ten days, I should not be able to reach London in time to proceed on the other inspections. I therefore intend to examine the works of this railway on or before the 4th instant, and then to report their state for your Lordship's consideration.

The Earl of Ripon,
&c. &c. &c.

I have, &c.
FREDERIC SMITH, Lt.-Col., R. E.
Inspector-General of Railways.

REPORT of Lieutenant-Colonel Sir Frederic Smith, relative to the Opening of Ulster Railway from Lisburn to Lurgan.

MY LORD,

Belfast, October 4, 1841.

I HAVE the honour to acquaint your Lordship that I have this day completed my inspection of the Ulster Railway, preparatory to its being opened to the public from Lisburn to Lurgan, pursuant to the notice given to the Railway Department on the 4th ultimo, by the Directors of the Company.

The royal assent for this railway was given in February, 1836, and it was then contemplated to extend it from Belfast to Armagh, but in consequence of the powers of the Company having partially lapsed, it has since been determined, or found necessary, to abandon for the present the idea of carrying it beyond Portadown.

The construction of the railway was commenced in May, 1836, and the first opening took place on the 12th August, 1839. This was from Belfast to Lisburn, a distance of seven miles and a half.

The notice received from the Directors on the 4th ultimo, intimated their intention of opening on this day a further portion of $12\frac{1}{2}$ miles, viz. from Lisburn to Lurgan, as I have already stated, leaving about five miles to open at some future time, when the total length of the line will be 25 miles, having Belfast and Portadown for its termini.

A single line of road only has hitherto been laid, but a sufficient quantity of land has been purchased, and the embankments, cuttings, and bridges have been so formed as to admit of a double line, whenever the traffic may demand, and the circumstances of the Company may justify this addition.

The gauge adapted by the Ulster Company is six feet two inches, as recommended by the Irish Railway Commissioners; and the rails, which are of a very good form, and weigh 63 lbs. to the lineal yard, are laid throughout on longitudinal timbers with continuous bearings. These timbers measure $12\frac{1}{2} \times 6\frac{1}{2}$ inches, in scantling, and rest on transverse sleepers of 10 feet in length, placed at intervals of not exceeding 10 feet; the sleepers, which lie under the joint of the longitudinal timbers, being 12 inches by four, and the intermediate sleepers being only eight inches by four. The longitudinal timbers and the transverse sleepers are connected together by means of malleable iron knees or brackets, secured to both by screws three inches and a quarter long. The advantage of this mode of connection is that it admits of the position of either timber being altered in a few minutes, which cannot be done by the plan of fixing in more general use.

The rails are secured to the longitudinal timbers by square-headed screws five inches long, and eleven-sixteenths of an inch in diameter, of which about three are used in every yard.

I thoroughly approve of the general principle of the system above described, but am of opinion that where heavy loads of merchandize are carried on this railway, it will be proper to increase the number of screws, for which I observe that the rails are already tapped, and I question whether the number of the transverse sleepers is sufficient.

In passing along that part of the line already open to the traffic, I did not observe anything in the construction requiring particular notice, excepting that the curve near the Belfast terminus, having a radius of only 18 chains, should be travelled over at a very moderate rate of speed, and the gates of the level crossing of Sandy-row.

These gates, which are seven feet high, and close boarded, stand across the railway, and are therefore not in accordance with the general Turnpike Act of 1839; but the traffic on this public road is so great and constant that it would be productive of extreme inconvenience to the persons using this thoroughfare if the gate were to be removed from their present position and placed so as to shut across the carriage road. I would therefore recommend that the necessary steps should be taken to legalize this infraction of the 2 and 3 Vic. c. 45.

I remarked, however, that it appears to be the general practice on this line to leave the gates of the level crossings open till the very moment that trains are expected; and the gate-men sometimes go to a considerable distance from their respective gates, leaving them open. Nothing can be much more dangerous than this practice, and it should be forthwith discontinued, and an order issued by the Directors desiring that these gates are always to be kept closed, except when carriages, cattle, &c. are to cross the rails, and there is no engine or train in sight or within hearing; and that they are to be again shut as soon as the carriages, &c. have crossed.

In my inspection of the portion of railway between Lisburn and Lurgan I found the whole of the cuttings finished and in a most satisfactory state, and the embankments and entire "formation" completed, with the exception of a short gap, not exceeding 150 yards in length, at what is called the "Lady Bridge." This gap, however, would prevent the possibility of the line being opened on this day for the public traffic, as originally contemplated by the Directors, even supposing the whole of the other works to have been finished, which is not the case. It is true that by great exertion the whole might be completed in a week, but openings hurried in

this manner are, in my opinion, of very questionable advantage to a company, and they tend to diminish the safety of the passengers. I have therefore recommended that the opening should be postponed for a fortnight at least, and I am happy to say that the chairman and engineer fully concur with me in the propriety of such a postponement.

I have carefully examined the whole of the bridges belonging to this Company between Lisburn and Lurgan, and so far as an opinion can be formed of such works when finished, and without opening their foundations, I have no hesitation in saying that I consider them substantial and well built. There are however two of these bridges which are not in conformity with the Act. The first, proceeding towards Lurgan, is that over the "Antrim Lane" public road. Notwithstanding that the railway is carried over this road on iron girders, for the purpose of more readily getting head-room, the height from the carriage-road to the underside of the girders, instead of being 16 feet, as prescribed by the Act, is only 11 feet 5 inches.

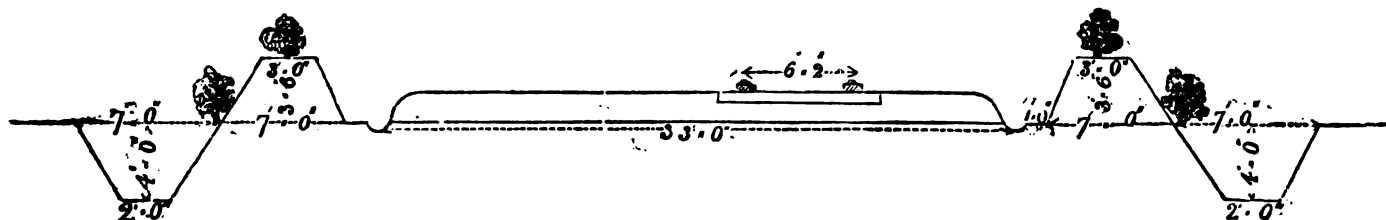
It would appear from the accompanying letter, dated the 2nd instant, from Mr. Godwin, the engineer and manager of this railway, and from his personal communications to me, that the bridge in question had been originally constructed in strict accordance with the Act, but that the height had been diminished by the road having been raised by the agent of the Marquis of Hertford, who holds himself liable to restore the road to its former state whenever it may be necessary.

The second deviation from the Act occurs at the bridge built across the railway for the Ballinderry road. The width between the parapets ought to have been 15 feet, whereas it is only 14 feet 6 inches, but the difference is so small and the traffic so limited, that I do not see any occasion for the Board of Trade stepping forward to compel the Company to alter this bridge; nor am I disposed to suggest their interference in respect to the deficiency of head-room at the Antrim Lane bridge, unless formal complaints are preferred on account of these irregularities by aggrieved persons. In that case the full width of the Ballinderry bridge might easily be obtained by diminishing the thickness of the parapet-walls, which are unnecessarily massive; but the prescribed height under the Antrim Lane bridge is only to be got now by removing the materials placed upon the road by the agent of the Marquis of Hertford, or by raising the bridge and altering the gradients in connection with it. But either of these operations would create inconvenience; the one to the traveller on the high road, and the other to the railway passenger; and there would seem to be no necessity for making any alteration here, as I am informed by Mr. Godwin, that the height is already ample for the ordinary traffic of the neighbourhood.

With the exception of about half a mile, I found the whole of the timbers and rails laid from Lisburn to Lurgan, and the greater part of the line well ballasted and in a satisfactory state, but the mile-posts and gates for the level crossings have not been put up. The whole of these works may however be completed in a few days, but the formation of the fences is in a very backward state, and will be the chief cause of delaying the opening.

I consider the proper fencing of a railway essentially necessary to the safety of the passengers, and it appears to have been so regarded by the Legislature; but I regret to say that I do not think the fences of the Ulster Railway calculated for the main object intended, namely, to prevent cattle straying upon the line.

I learn from Mr. Godwin that it has been found impossible, in the neighbourhood of this railway, to protect wooden fences from depredation, and that he has therefore been driven to the necessity of adopting a bank and ditch, as the only means of enclosing the property of the Company, unless he had recourse to the expensive alternative of building a boundary wall. He handed to me the accompanying sketch to show the proportions and form of the bank and ditch he proposes for the new portion of the line. If formed as represented in the sketch,



and the slopes are properly maintained, I think this fence will prove to be sufficient, provided the soil is of such tenacity as to stand at the batter proposed, but I cannot pronounce a decided opinion without seeing the fence in a complete state, and under these circumstances the responsibility of any mischief that may result, in the event of the fence proving to be insufficient, must rest with the Company. I feel, however, bound to remark, that I consider the enclosure of many parts of that portion of this line which is already open to be very defective, and the Company should be called upon to put it throughout in such a state as the Act prescribes. I am aware that the Directors rely much on the number and efficiency of their police and gatemen, of whom 17 are employed on the $7\frac{1}{2}$ miles of railway between Belfast and Lisburn, and I understand 30 are engaged for the portion about to be opened; but the Board of Trade can only regard these men as auxiliaries, and cannot release the Company from their liability to form proper fences. I will only add, on this point, that Mr. Godwin has stated to me, that insufficient as the present fences may appear, they have enabled the police to keep the railway free from trespass.

There are no fewer than eleven level crossings of public roads between Lisburn and Lurgan, and for each of these crossings, gates, according to the Act, are either already fixed or in course of being put up. At every crossing, however close they may be to each other, a gate-

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keeper should be stationed, and no duty beyond that of attending to his crossing should be assigned to any one of these men.

The ordinary wages of a labourer in the neighbourhood of this place is 6s. a-week, and as I find that the Railway Company pay their gatemen 10s. a-week, they will have no difficulty in procuring proper persons for these responsible situations. Indeed the men I saw on duty, when I made my inspection, appeared to be active, intelligent, and of a respectable class.

The terminus at Belfast is in a convenient position for the traffic of the town, and the shed and platform are of ample dimensions. The merchandize store and shed are now building and are well placed.

The terminus at Lurgan is in course of construction, and may be ready in about a fortnight from this time.

A turn-table should be put up at the Lurgan terminus before the line is opened, in order to prevent the trains being worked tender foremost, which I hold to be exceedingly perilous to the traveller, and that it would be very desirable that this turn-table should be so placed as to render it unnecessary for the engine to pass over the level crossing just beyond the Lurgan terminus, as that would remove one cause of danger, the fatal effects of which have been recently experienced at the Bridgewater terminus of the Bristol and Exeter Railway.

The intermediate stations on the Ulster Railway are Dunmurray, which is a mere stopping-place, where a few passengers are occasionally taken up or set down, and Lisburn, where a booking-clerk is in charge.

On the portion of the line about to be opened, it is intended to have only one station, viz., at Lady Bridge, which is not yet built.

I am not aware of any deviation from the Parliamentary plan, excepting in a change of the direction of the line between Lisburn and Lady Bridge. It appears that both the Parliamentary line and the line executed run through property exclusively belonging to the Marquis of Hertford, who has consented to the alteration.

In respect to the Parliamentary section, I find that, in order to avoid a deep cutting at the summit of the line, a gradient of 1 in 792 has been altered to two gradients of 1 in 200 for half a mile in length and 1 in 150 for three quarters of a mile. The Company, I apprehended, had no right thus to deviate from the Parliamentary gradients, but as the alteration does not in any way injure any adjoining private property, and as the planes adopted are not unusually severe, I see no reason for objecting to this deviation.

In the working of the line, however, the engine-drivers must be instructed to run down the planes at the summit of the line with great care, and with a velocity not exceeding, in the first six months, 25 miles an hour.

The gradients of the line are as follows, proceeding from Belfast :—

Level.		Level.	
Rising	1 in 330	Rising	1 in 330
Level.		Level.	
Rising	1 in 200	Falling	1 in 440
Rising	1 in 300	Rising	1 in 792
Level.		Rising	1 in 200
Rising	1 in 300	Rising	1 in 150
Level.		Falling	1 in 353
Falling	1 in 330		

I have the honour to enclose a list of the establishment of the Ulster Railway, which seems to be ample, and I also transmit a copy of the existing code of rules and regulations for the guidance of the servants. As this code only applies to a single line, and the extent of railway open is very inconsiderable, the rules appear to have been hitherto found sufficient for the purposes of the Company, but I have recommended Mr. Godwin to prepare a fresh code, embracing many points affecting the safety of the passengers, which are not touched upon in the present rules, and he has promised to submit the new code for your lordship's approval before it is printed.

The trains leave Belfast daily at 7, 9, 11 A. M., 1, 3, 5, and 7 P. M., and return from Lisburn at the intermediate hours; the engine which takes the train to Lisburn bringing the return-train back. Thus the collision of two trains is impossible, and I trust that for the safety of the passengers the same system will be continued when the line opens to Lurgan; for although by an intermediate siding the chances of collision would be very remote, under ordinary circumstances, yet in the event of two trains running at the same time from the termini to the siding or passing place, the detention or breaking down of one train might by possibility lead the driver of the other to go beyond the siding, and then some terrible accident might occur.

The whole of the engines have been made by Sharp, Roberts, and Co., and have six wheels. The tenders are on four wheels, and have powerful breaks, worked by inside screws.

The carriages are on four wheels, each first-class carriage having four bodies, and containing eight passengers in each body.

The second-class carriages contain in each compartment 12 passengers, making 48 in each carriage.

There are on the roof of every first and second-class carriage two seats, each of which will hold three persons.

These outside seats for passengers I consider extremely dangerous, for not only is there a risk of persons falling off these seats, but they incur the danger of being killed in passing under the bridges, should they inadvertently stand up.

The fares to Lisburn, a distance of $7\frac{1}{2}$ miles, are—

	s.	d.
For first-class passengers . .	1	0
For second-class passengers . .	0	6

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The Company have it in contemplation to run third-class carriages, and then the rates of fare will undergo revision. The first and second-class carriages have spring buffers, but the third-class carriages and horse-boxes are not provided with spring buffers, which should be used with all carriages that run with the passenger-trains.

Mr. Goddard, the Chairman of the Ulster Company, as well as the engineer, seem to be most anxious to render their railway as perfect and safe as the nature of the traffic may require, but their good fortune in having hitherto been free from serious accidents may lull them into a false security, and therefore it is now proper to urge them to neglect no obvious means of increasing the safety of the passengers. I feel confident that they will cheerfully adopt any recommendations coming from your Lordship, and I would therefore submit that the suggestions contained in this report should be made known to them, if they meet with your approbation.

The line may, in my opinion, be opened to the public traffic on your Lordship's receiving a certificate from Mr. Godwin, to the effect that the fences are so formed as to prevent cattle getting from the adjoining land upon the railway; that all the gates of the level crossings are put up, and gatemen stationed to watch them; that the mile-posts have been fixed, and the turn-table established at Lurgan.

The Earl of Ripon,
&c. &c. &c.

I have, &c.,
FREDERIC SMITH, Lt.-Col., R.E.,
Inspector-General of Railways.

SIR,

Ulster Railway Office, Belfast, October 2, 1841.

IN reply to the observations and inquiries which you made in the course of your inspection of the Ulster Railway, I beg to state, for your information, that the line from Lisburn to Lady Bridge is a deviation from the Parliamentary line, but has been made, with the consent of the owner and occupiers of the land through which it passes, agreeably to the provisions of the Act.

The height or headway of the Antrim-lane bridge, which you noticed as being under the height stipulated in the Act, has been reduced by the agent of the Marquis of Hertford, by filling up the roadway for the purpose of improving its gradient, but he holds himself bound to give the necessary headway if called upon to do so; it may be proper to add that the Marquis of Hertford is the sole proprietor of the town of Lisburn and the estate for a considerable distance round, and is the only person likely to take an interest in this question.

I beg to enclose a tracing of the section of the fences which it has been found advisable to adopt on this railway, and which has been found, by the experience of the last two years on the line now working, to be perfectly efficient.

Sir Frederic Smith,
&c. &c. &c.

I have, &c.,
JOHN GODWIN.

P.S. I also enclose a tracing of Antrim-lane bridge agreeably to your wish.

The Ulster Railway incorporated by Act of Parliament 6 Wm. IV. c. 33.

Proprietors to raise money amongst themselves for the undertaking, not exceeding 600,000*l.*, to be divided into 12,000 of 50*l.* each.

There are 296 proprietors at present, 60 of whom are English shareholders.

The Board of Directors consists of 21 members appointed by the shareholders, 7 of whom vacate annually by rotation, but are eligible to be re-elected; this Board meets the first Thursday in each month.

A sub-committee of seven Directors meet weekly for the transaction of business.

Engineer and manager of the railway, John Godwin, Esq.

Chief clerk of the Company, Mr. John G. Smith, who is appointed by the shareholders, and keeps the general books of the Company, and is also secretary to the Board of Directors.

James Bristow, Esq., of the Northern Bank, is auditor of accounts, and is appointed by the shareholders.

There are two booking-clerks at the Belfast station, viz., Messrs. Clotworthy and McCullough.

Mr. Thomas Steele is storekeeper at the Belfast station, and attends to the starting of the trains, also the cleaning and supervision of the carriages.

Mr. Thomas Frith is chief mechanic, and superintends the repairs of the locomotive engines.

Mr. Arthur Leonard is the conductor or chief guard, and travels with each train, collecting the tickets at the stations, and has the general charge.

An assistant guard also travels with the train.

There is one policeman, eight porters, and one gatekeeper, at the Belfast station.

On the line to Lisburn there are nine policemen and four gatekeepers placed as follows:—

First beat. Tea-lane to Blackstaff-bridge, Robert Irwine.

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Second beat. Blackstaff-bridge to Bellshouse, William Goudy.
Third beat. Bellshouse to Stockman's-lane, Robert Clifford.
Gatekeeper at Stockman's-lane, Robert Dowuey.
Fourth beat. Stockman's-lane to Finaghy, Robert Sutherland.
Gatekeeper at Finaghy, Francis Reynolds.
Fifth beat. Finaghy to Dunmurry, Henry Allen.
Gatekeeper at Dunmurry, James Hinchy.
Sixth beat. Dunmurry to M'Master's-bridge, John Knox.
Seventh beat. M'Master's-bridge to Bell's-bridge, James Hinchy, jun.
Eighth beat. Bell's-bridge to Barbour's-crossing, M'Neilly Erskine.
Gatekeeper at Barbour's-crossing, Henry Wynn.
Ninth beat. Barbour's-crossing to Lisburn, Alexander Armour.

Lisburn Station.

Mr. William F. Sinclair, booking-clerk, and has also the general superintendence; there is also at this station one policeman, one gatekeeper, and one porter.

The appointments and arrangements for the extended line about to be opened to Portadown are proposed to be as follows:—

A gatekeeper to each public road crossing the railway on a level, and a policeman at such intervals as the circumstances of the line require, they being so arranged as to be in sight of each other, from the extreme ends of their beat.

A booking-clerk, with the necessary number of porters, &c., will be placed at each station.

The stations will be—

Moir,
Lurgan, and
Portadown.

RULES and REGULATIONS to be observed by the Officers of the Company.

Instructions to Engine and Firemen.

I. The rate of travelling for passenger-trains, in either direction, is not to exceed 25 miles an hour: and the time allowed for the whole distance between Belfast and Lisburn is twenty-four minutes, and two minutes allowed for each stoppage at the intermediate stations.

II. No engineman to make up lost time by increasing the speed of his engine, but to report the cause of his detention on his arrival.

III. No person, except the engineman and fireman, shall be allowed to ride on any engine or tender, without the special license of the Directors.

IV. No engine is to approach within six hundred yards of another that is before it, and going in the same direction.

V. Every engineman and fireman is to stand up whilst working the engine, and keep a good look-out for the signals of the gatekeepers, station-men, police, &c., and to see that the line is clear; and in no case is the attention of both of them to be taken off this object at the same time,—the engineman always keeping a look-out when the fireman is engaged putting on coke, and the fireman to do the same when the engineman is engaged with any part of the engine.

VI. No engineman shall, under any circumstances, leave his engine or train without placing the fireman in charge of the same, to prevent accidents.

VII. Every engineman, on starting from, or approaching any of the stations or stopping places, shall give notice, by sounding his alarm-whistle: and this must be particularly attended to on approaching the crossings of public roads, which are on a level with the railway.

VIII. At all times, enginemen must be particularly careful to shut off the steam at least five hundred yards before approaching the stations on the different parts of the line; this will enable them to stop the engine in time, should any obstruction be in the way. And, should any engine have occasion to stop on any part of the line where there are no gatekeepers or policemen to render assistance, the fireman shall run back five hundred yards, or so far as may be necessary, to stop any other engine coming in the same direction.

IX. When an engine gets off the rails, or meets with any other accident, the engineman is to continue in charge of the engine and train, till the arrival of the engineer or his assistant, and he is directed not to allow improper men to interfere, but to send off for the workmen belonging to the Company.

X. If an engine meets with any accident on the line, the same is to be immediately reported to the engineer.

XI. At starting, either with goods or passengers, the enginemen are directed to do so as steadily as possible, to prevent the breaking of the draw-chains, as well as inconvenience to the passengers.

XII. The fireman shall take care, before the starting of an engine, that the switches are all right; and both engineman and fireman will be held responsible for any accident arising from neglect in this particular.

XIII. Both enginemen and firemen are required to report any of the gatekeepers, police, or station-men who are off duty, or refuse to assist when required.

XIV. Every engineman is required to oil the bearings of his engine at the commencement of his trip.

XV. Every engineman and fireman will be expected to be in readiness, with the engine and

tender properly supplied with coke and water, at least ten minutes before the starting of each train.

XVI. The engineman is to take his directions, as to starting, &c., from the guard or conductor of the train, and from no other person, except the principal engineer or superintendent.

XVII. If the engineman or fireman be found intoxicated, when on duty, he will be immediately dismissed.

XVIII. Enginemen are expected to work the engines in such a manner as to be independent of the assistance of the break at the terminus of the line, and at the different stopping places; the breaksman is, nevertheless, to be ready at his post, and put on the break, if ordered to do so by the driver. This rule is enforced to prevent the driver from bringing the train into the stations at too great a speed, and running over the turn-plates.

XIX. Engine-drivers are prohibited from driving the engine at a greater speed than 25 miles per hour; and are required, gradually and partially, to close the regulator on passing the reverse curve at Richardson's embankment, and the breaksman is expected, at these places, to have the break in hand, and adjusted, so as to take immediate effect, in case of casualty. In working the down trains, the regulator must be partially closed at Farm-hill bridge; and, on passing the Finaghy road, the steam must be shut off, unless the driver finds it necessary to augment the speed at these parts, where he will use his discretion.

XX. On entering the Belfast terminus, the whistle must be sounded on passing the Water Station, and again at the Point Plate, to give the gatekeeper, at Sandyrow, sufficient time to open the gates; and, in the night time, the driver must stop the train until the signal lamp of the gatekeeper be held up.

XXI. The engine-driver and fireman is expected to look back at the train as often as possible, for the purpose of ascertaining if the carriages are all in perfect order. Previous to the starting of each train, the engine-driver must examine both the engine and train, and be satisfied that all is in perfect condition; and if he observes any part of the line to be out of order, or in the slightest degree defective, he must immediately direct the attention of the superintendent to the spot; and if it be not immediately attended to, he must report it to the principal engineer.

XXII. Enginemen are particularly required to observe the signals of the policemen, and that, too, in sufficient time, to enable them to stop the train before reaching them, if the signal require such a proceeding.

Instructions to Guards.

I. The guard will be required to collect the tickets from the passengers previous to the starting of the trains, and give them to the superintendent, seeing that no person rides in the carriages who has not delivered his ticket.

II. He will be responsible for having a sufficient number of coaches at each end of the line, for the different trains.

III. The guard is required to report, on the arrival of the train, the time it has been on the road; also any stoppage or delay.

IV. He will be required to see the passengers seated, and every thing ready at the exact time for starting; every exertion must be made on this point, as the trains will not be allowed to wait, and the guard will be held responsible for any delay.

V. The guard only will give directions to the engineman when the train is ready for starting from the different stations.

Instructions to Gatemen and Policemen.

I. Every gateman and policeman is required to be on duty at six o'clock every morning, except Sundays, on which day he is to be there by eight o'clock; and, on no account, to leave the road until the last train at night has gone by.

II. The gatemen and policemen, on coming on duty, are required to see that the portion of road under their charge is free from obstructions, and that all the switches or tongues are in proper order.

III. They are to report to the engineer, or his assistant, any irregular conduct of the enginemen, particularly if they make any useless stoppages for the purpose of delay.

IV. If any engine experience any difficulty in moving, either from ice or any other impediment on the rails, the police there stationed are to render every assistance, by going before and sanding the rails, or by clearing the snow, if any, from them.

V. The police are to be very particular in giving the proper signals to the enginemen when they are passing with the train, of which they will be instructed by the engineer.

VI. If an accident occur to any engine or train, the police must immediately go forward towards Belfast, and communicate with the next policeman or gatekeeper, who must, in his turn, immediately proceed to the next, and so on, till the information is communicated to Belfast.

VII. Gatekeepers and police are particularly directed to use their utmost endeavours to prevent cattle straying on the road, and to report the same, as well as the state of the fences and gates (if not in proper order), to the engineer or his assistant; and they are, also, to prevent the public from using the road as a footpath, except the occupiers of adjoining lands, who are passing from one field to another.

VIII. Gatemen are required to shut the gates and prevent the public crossing the railway just before the passing of a train, and to use every every means to prevent accidents to persons crossing the railway on foot.

IX. Each policeman and gatekeeper will be furnished with a barrow, shovel, and packing-tools, and they will be expected to render every assistance in keeping the line in gauge and level, and do whatever work may be required of them by the engineer.

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Instructions to Porters and Stationmen.

I. Porters, as well as all other officers belonging to the Company, will be required to be civil and obliging to the passengers travelling by the railway; and use every exertion to forward the trains at the regular time.

II. No fees or gratuities must be taken.

III. Porters will be required to take great care of passengers' luggage and parcels delivered into their charge; and they will be held accountable for any damage that may arise in consequence of their carelessness.

IV. Porters will be required to render every assistance in shifting the carriages, engines, &c., from one line to another; and will be required to execute any work about the station that may be required of them.

Non-compliance with the foregoing regulations will subject the party to fine or dismissal, as the circumstances may warrant.

GIVING notice of opening a portion of the Line from Lurgan to within a mile of the proposed Terminus at Portadown, &c.

SIR,

Ulster Railway Office, Belfast, October 8, 1841.

IN compliance with the provisions of the Act 3 and 4 Vic., cap. 97, I am desired by the Directors of this Company to give you notice of their intention to open a further portion of their line, commencing at Lurgan, and terminating within a mile of the present proposed terminus at Portadown, being a distance of four miles, and making altogether a distance of 24 miles from Belfast.

I am desired to add that the works on this portion of the line will be completed a considerable time before the expiration of the 30 days limited by the Act as the period which must elapse before the Directors could act upon this notice. The Directors therefore hope that your Honourable Board will permit the opening of the above mentioned four miles of railway, at the same time as the opening to Lurgan takes place, on their pledging themselves that the works will be finished in every particular equal to that already examined by Sir Frederic Smith; and as the remaining part of the line, together with the buildings at the Portadown terminus will be completed early in summer; your inspector will then be enabled to examine the entire line, and see that the Directors have fulfilled their pledge.

I have, &c.,

S. Laing, Esq.,
&c. &c.

JOHN GALT SMITH, Secretary.

LETTER sent to the Ulster Railway Company, in reply to their Letter of the 8th October, relative to opening a further portion of the Line.

SIR,

Board of Trade, Whitehall, October 20, 1841.

IN reply to your letter of the 8th October, relative to the opening of a further portion of the Ulster Railway, commencing at Lurgan and terminating within a mile of the present proposed terminus at Portadown, I am directed, &c., to inform you that their Lordships will not object to the opening of these four miles, as proposed by the Directors, provided they receive an assurance that the whole of the works on the portion in question are completed in a manner equal in every respect to those examined by Sir F. Smith.

I am, &c.,

The Secretary of the Ulster
Railway Company.

S. LAING.

IN reply to Letter from this Office of the 9th October, relative to the fitness of the Line for being opened on the 8th instant; also sending a Copy of Rules and Regulations.

SIR,

Ulster Railway Office, Belfast, November 6, 1841.

REFERRING to your letter of the 9th October, addressed to the secretary of this Company, and requiring me to certify that the several deficiencies in that part of the line between Lisburn and Lurgan, about to be opened to the public, are made good, agreeably to the suggestions of Sir F. Smith, and set forth in your letter, I have now the honour to acquaint you that the several deficiencies alluded to have all been made good, and that the line will be opened to Lurgan on Monday next, the 8th instant.

I have, &c.,

S. Laing, Esq.,
&c. &c.

JOHN GODWIN.

No. 14.

BRIGHTON RAILWAY.

REPORT of Lieutenant-Colonel Sir Frederic Smith on his Inspection of the Brighton Railway, for the purpose of ascertaining the state of the Works.

MY LORD,

Board of Trade, Whitehall, November 3, 1841.

I HAVE the honour to acquaint your Lordship that I have this day, accompanied by Mr. Rastrick, the engineer-in-chief of the Brighton Railway, inspected that line, with a view of ascertaining how far your Lordship's recommendations for the public safety have been adopted, and to what extent the works may have suffered by the late unfavourable weather.

I found that the fences, which were defective on my former inspections, have been completed in a satisfactory manner, and that the unfinished slopes of the cuttings have for the most part been trimmed off. Where this has not been done, the operation is now in progress, and I feel warranted in stating that there are few lines in which the cuttings are so free from slips and defects.

The parapet of the Ouse Viaduct is very nearly finished, and the workmen engaged in its completion appear to cause no obstruction to the safe passage of the trains.

At those parts of the line where there was a deficiency of ballast, it has been supplied.

On the other hand, I observed that some of the loftier embankments have partially settled, in consequence of the long continuance of rain, and I think from this cause a further subsidence may be expected. I believe, however, that scarcely any new line has been more free from casualties of this nature than the London and Brighton Railway, but it is not the less necessary that the trains should be worked over the portions of the line to which I allude with extreme care and at a very low rate of speed; and I would strongly recommend that the number of men employed in rectifying the irregularities in the "permanent way" should be very considerably increased, and retained upon the line until the embankments shall have become more consolidated, so that the proper remedy may be applied, in case of any subsidence, without loss of time.

The embankments to which I most particularly refer are, first, that to the southward of the Red Hill station, which has been in some degree weakened by slips on both sides; second, the embankment near the $23\frac{1}{4}$ mile-post from London; and, third, that between the $24\frac{1}{4}$ and $24\frac{1}{2}$ mile-post, which have slightly subsided; fourth, that near Kempt's farm, which has gone down very considerably and materially altered the gradient of the line; fifth, that between the $40\frac{1}{4}$ and $40\frac{1}{2}$ mile-posts; and, sixth, the embankment at Hassock's gate, which shows symptoms of a partial settlement and loss of gradient.

The speed of the trains has been reduced over those parts of the embankments to which my observation applies, but the rate should still be further reduced, and should not exceed 15 miles an hour at any of the points in question, and should not amount to seven miles an hour over the settlement on the Kempt's farm embankment; nor should any train pass over these portions of the line after dusk, without their having been patrolled by a careful and trustworthy man shortly before its arrival. If this person finds the line in a secure state, he should make the signal of "all right," and unless this signal is exhibited the train should not proceed.

According to the present "Time Table," there will be two trains *down* and one train *up*, that will pass over the embankments in question after dusk, and I would suggest, for the guidance of the drivers of these trains, that a green light should be fixed to a standard post at each end of the treacherous ground. The plate-layers are at present directed to show the green flag at those points by day, and if such a precaution is necessary when the drivers are enabled, if travelling at a cautious rate of speed, to see enough of the work to form a tolerable accurate judgment of the state of the rails, it is much more necessary that these men should have the fullest warning at *night*, and I feel persuaded that any little additional cost resulting from such precautions will be amply repaid by the increased confidence they will give to the public.

South of Hayward's Heath tunnel, near the 39 mile-post, there has been a small slip on the east side of the cutting. In order to facilitate the removal of the ground that has fallen, the "down line" of rails from that point up to the Hayward's Heath station, being a distance of a mile and a half, including the tunnel, has been placed at the disposal of the contractor, and, in consequence, the down trains have to cross over to and travel upon the wrong line for that distance, after which they re-cross to the "down line." This arrangement, owing to the uncertainty as to the arrival of the down trains, arising out of the existing obstruction on the Croydon Railway, has become, in my opinion, one of some risk, from the probability of its leading to a collision, and I would advise that both lines should be again thrown open to the traffic during the hours that the passenger trains are running, and given up to the contractor at night only.

Although there is an evident and earnest anxiety on the part of the engineer-in-chief to omit nothing that he deems necessary for the safety of the passengers, yet it is not the less my duty as a public officer, with a heavy responsibility upon me, to lay before your Lordship a statement of what it seems to me that the public safety demands.

With proper care and with due attention to the points which in this and my former reports I have brought under consideration, I see no reason to apprehend any interruption of the traffic; and after a careful examination of the works I feel bound to repeat the opinion I have already expressed as to their general substantial character; and I remain thoroughly persuaded

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that the late fatal accident in the copyhold cutting resulted alone from the high rate of speed at which the train was travelling, and the improper application of an extra engine on a descending gradient.

The Earl of Ripon,
&c. &c. &c.

I have, &c.,
FREDERIC SMITH, Lt.-Col., R.E.,
Inspector-General of Railways.

No. 15.
London and South
Western, Sheffield
and Manchester,
and Northern and
Eastern.

No. 15.

LONDON AND SOUTH WESTERN, SHEFFIELD AND MANCHESTER, AND NORTHERN AND EASTERN RAILWAYS.

LETTER sent to the London and South Western, Sheffield and Manchester, and Northern and Eastern Railway Companies, requiring a Certificate from the Engineer of the Companies as to the fitness of the Lines for Public Traffic previously to inspections taking place.

SIR,

Board of Trade, Whitehall, October 5, 1841.

WITH reference to your letter of the 27th September, announcing the intended opening of the Sheffield and Manchester Railway on the 25th October, I am directed, &c., to say that, in consequence of the repeated disappointments that have taken place from lines not being sufficiently completed to enable the inspector appointed by their Lordships to make a satisfactory report at the time fixed for inspection by the Company, their Lordships will require a certificate from the engineer of the Company, stating that he has every reason to believe that in one week from that date the line proposed to be opened will be sufficiently completed for conducting the public traffic in safety before they proceed to give instructions to an inspector to visit the line; and you are requested to furnish a section and plan of the line as constructed, showing the deviations from the Parliamentary plan and section; also detailed drawings of the two junctions, with a description of the mode in which it is proposed to work them, a copy of the code of regulations, and list of the establishment intended to be employed on the branch in question.

The Secretary of the London and South Western,
Northern and Eastern, and Sheffield and Manchester
Railway Companies.

I am, &c.
S. LAING.

LETTER sent to the Sheffield and Manchester Railway Company, relative to the fitness of the Line for opening, &c.

SIR,

Board of Trade, Whitehall, October 21, 1841.

I HAVE received a letter from Mr. Locke, in which he states that, from the information which he has received from the resident engineer, he is led to believe that the portion of the line from Manchester to Hyde will be completed for opening by the 28th, and offering to meet Sir F. Smith either on the 23d, or any other day more convenient for him. As the object in requiring a week's notice was to prevent the disappointments which have been so frequently occasioned by the incomplete state of the works at the time fixed for inspection, and as Sir F. Smith is charged with several other inspections about the same time, which would render delay inconvenient, I must request that you will favour me, in conformity with the request of the Lords, &c., with an official notice, which may be certified either by Mr. Locke, or in his absence, by the resident engineer in charge of the works, of the precise day when the line is expected to be entirely completed, and ready for inspection.

The Secretary of the
Sheffield and Manchester Railway Company.

I am, &c.
S. LAING.

REPORT of Lieut.-Col. Sir Frederic Smith on the proposed opening of a portion of the Sheffield and Manchester Railway.

MY LORD,

Manchester, November 10, 1841.

PURSUANT to your Lordship's instructions of the 7th inst., I have this day inspected that portion of the Sheffield, Ashton-under-Lyne, and Manchester Railway which the notice, received on the 1st inst. from Mr. Locke, the engineer-in-chief, specified that it was the intention of the Directors to open to the public on the 11th inst.

The whole extent of the railway, from Sheffield to Manchester, will be 40½ miles; and the portion now proposed to be opened is 7½ miles in length, commencing at a point on the Manchester and Birmingham Railway, about three-quarters of a mile from the Manchester Terminus, and ending at Godley.

The Act was passed in May, 1837, and the work was commenced in August, 1840. The formation is prepared for "a double line of way," but a "single line" only is at present laid; and it is the intention of the Company to work trains in both directions on this single line, having only a small length of double line for a passing place at the Ashton Station, which is about midway between the termini.

The gradients are as follows:—

	Mls.	Chains.
Rising 1 in 176	1	71½
Ditto 1 in 100	0	64½
Ditto 1 in 132	1	10
Ditto 1 in 330	0	30
Level	0	20
Rising 1 in 176	0	23
Ditto 1 in 100	0	77
Ditto 1 in 188½	0	70
Ditto 1 in 140	1	38
	8	0

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Your Lordship will observe that the inclination is entirely in one direction, rising towards Godley; and the working of this line will be an additional test of the system of forming railways with third-class gradients.

The gauge is 4 feet 8½ inches, and the rails used on this line weigh 75 lbs. to the lineal yard. They are supported on stone blocks in the cuttings, and on transverse larch sleepers on the embankments.

The intervals between the bearings next to the joints are 3 feet 9 inches, and the intermediate intervals are 4 feet 3 inches.

The "joint chairs" weigh 25 lbs. each, and intermediate chairs 22 lbs.

Every chair is fixed by means of two spikes, and the rail by keys of compressed wood, those at the joints being 6 inches long, and the others 4 inches long.

With few exceptions, the embankments, cuttings, and fences are finished, and in a very satisfactory state; but those exceptions render it indispensable that the proposed opening should be postponed.

The ballasting is generally in a very good state, excepting for a few hundred yards at the North-street Cutting, where the "block road" was not completely laid when I passed.

The cuttings which are incomplete are the Ardwick contract, No. 1, which is not finished on the south side; and the Newton-wood Cutting, which remains to be trimmed off on the north side. Under ordinary circumstances it is, in my opinion, extremely important for the public safety that such works should be finished before the opening of the line for passenger traffic; but in this instance, as a single line only is laid, there is ample space for the ballast-waggons to stand clear of the "traffic rails;" and as it is intended that the contractors shall only work at night, when there are to be no passenger-trains, I see the less objection to the proposed arrangement. I have, however, required Mr. Locke to depute a trustworthy man to have the responsibility, at each cutting, of placing at night, and removing in the morning, the points to be used by the contractor for shifting these waggons from the temporary to the permanent rails.

Some arrangement, such as this, is highly important, and I trust it will be carried into effect. With this understanding I am of opinion that, so far as regards the cuttings, the line might be opened by the 15th or 16th, provided the weather continues favourable; but I do not feel equally confident that the embankments will be in a safe and satisfactory state by that time.

The first embankment proceeding from Manchester is 1½ mile in length. The foot of the slope on each side rests on a brick wall, averaging 4 feet 6 inches in height; and these walls not only serve to diminish the spread of the embankment, but act as fences.

In one or two places, however, the walls have been forced out by the pressure of the mass of earth, and a consequent partial subsidence of the embankment has taken place; but these defects may be remedied in a few days.

The most important obstacle to the opening of the line is the state of the Newton-green embankment.

In the centre this embankment is about 45 feet high; and whether from the nature of the materials, or the unfavourable state of the weather when formed, or the late heavy rains, it would be difficult to determine, but it has subsided to such an extent, that the base has spread out to two or three times its original width. Mr. Locke observing that any additional materials of the same description only intended to increase the evil, used light sand to regain the required elevation in proportion as the embankment subsided, but finding that this attempt to obtain a steady surface has also proved unavailing, he has recently thrown two lines of large timbers, as longitudinal bearers, across the treacherous ground. These timbers are 16 inches square, scarfed at their meetings, and the scarf is supported by a template. This again stands on an upright shore. Other shores are placed at intervals of 10 feet apart under the bearers, and the shores standing opposite to each other rest on a cross sleeper of about 16 inches by 9.

The rails are laid on the longitudinal timbers, which it is intended to bolt together for the purpose of keeping their gauge.

This work, in its present condition, is very insecure, and it will require considerable dexterity and judgment to overcome the difficulty, so as to admit of an early and safe passage over this part of the line for the trains.

Mr. Locke is now of opinion, that any attempt to remedy the evil, by making up the embankment with fresh materials before the ensuing spring will be unsuccessful; and he, therefore, contemplates abandoning the attempt, and relying on the longitudinal bearing.

The objection to this is, that as the weight thrown upon the bearer is transferred to the upright shores, and thence to the cross sleepers, the stability of the work depends on the resist-

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ance offered by the solidity of the mass contributing to the support of these sleepers, and this mass we are aware is in a state of subsidence. Indeed, I understand one of the cross sleepers sank last night about 2 feet 6 inches.

It is quite clear that, by having longer shores, so as to admit of their going down to a solid bearing, the work may be made secure, and the mass of earth above the cross sleepers may then become unnecessary; but until this is done I cannot consider that the Company have done all that is requisite for the public safety.

Mr. Locke's experience and judgment will no doubt suggest the most efficacious way of giving the required strength; but until he has certified that this part of the work has been rendered perfectly secure for the passage of the engine and trains at the average speed intended to be used on this railway, I am of opinion that they should not be allowed to cross this embankment. Then, as an additional safeguard, I would suggest that the Directors should issue a regulation requiring the drivers of the engines to pass over the bearers at a very moderate speed; and it should be made the especial duty of some confidential and intelligent person to examine the shores before the passing of each train, to see that they are perfectly wedged up.

The stations are to be,—

Fairfield, . . . about 2½ miles from Manchester.

Ashton 5

Dukinfield 5½

Newton and Hyde 7

And Godley 8 miles. This is to be the Company's eastern terminus.

The station-houses are not finished; but they are to be merely small wooden sheds.

No turn-table has been put up at the eastern terminus, nor is it intended that there should be one, and, therefore, the trains will have to run, in one direction, tender foremost. This system, which I consider a very objectionable one, and which is generally admitted to be so, has been practised on the line between Stockport and Manchester for upwards of a year, and this, of course, forms an argument for its adoption on the Sheffield line; but it is a singular fact that the Stockport Company, with a view to diminish the risk of this proceeding, run the trains tender foremost *down* the inclined planes; whereas, with the very same object in view, the Sheffield Company intend to run the tender foremost *up* the inclined plane. The only course that remains for the Lords of the Council is, in my opinion, to recommend to both Companies to run the trains engine foremost in both directions, the only objection being the expense of the turn-table.

As I have already remarked, it is the intention of the Sheffield Company to start trains from both termini nearly at the same time, so that they shall meet at Ashton, where a small portion of double line is laid down to admit of the trains passing each other. I regret that such a plan should be in contemplation, for although I do not mean to say that it cannot, by proper regulations and a rigid adherence to them, be carried into effect without danger to the passengers, yet it is exposing them to an additional risk, for I can conceive cases in which the servants of the Company may be induced to pass the crossing place before the arrival of the opposite train. The whole responsibility of this arrangement must rest with the Company; and I can only hope that, if they persist in it, they will issue a regulation to the effect that no train shall pass the crossing place unless the opposite train shall have arrived there, or unless a guard or fireman of that train shall come down to the crossing place, and state that the train to which he belongs has not and will not be started, or has put back.

In the event of any train being detained at the crossing place, until within a quarter of an hour of the next train travelling in the same direction being due, a guard should be detached to meet it with proper signals to give notice of the obstruction of the line. A large disc signal to be used by day, and a red light for the night, should be put up at every station on this line.

I will suppose a case which might lead to great confusion if not to danger. A train leaving Manchester at 5 o'clock, P.M. for instance, in the winter, is detained about midway by some defect or failure in the engine, and instead of arriving at the crossing place at about 20 minutes past five, does not reach it till 45 minutes past 5; in the meanwhile, the train from Godley would be detained at the meeting place; then there will arise the risk of a double collision, for it will become a question of discretion whether or no both trains are to proceed, or whether for fear of a collision with the trains that should start from both termini at 6 o'clock, they should remain at the meeting place.

The foregoing is by no means an improbable case, and I would on all accounts recommend the Directors, at any rate, to be content with running trains at alternate hours from the termini, until the ensuing spring, when the line will be in more perfect order, and the servants experienced in their duties.

With a very few unimportant exceptions the bridges are completed, and these exceptions consist chiefly of unfinished portions of the coping stones, which can be put on without any interruption to the traffic.

The bridge over the Tame unites two embankments. That on the west side of the river, which is lofty and composed of a heavy material, has some tendency to slip, and I think it may press injuriously against the base of one of the piers. However, Mr. Locke, to whom I have mentioned my opinion, does not entertain any apprehension as to the perfect sufficiency of this bridge, but I have no doubt he will cause the work to be observed during the winter.

At the opposite side of the river, one of the piers has been very judiciously strengthened by an iron bolt being put through it.

The mile-posts, which are not yet put up, must be fixed before the line is opened to the public.

There are two level crossings, at each of which a gateman is to be stationed. One is called the Town-bridge-lane road, in the parish of Audenshaw, and the other the Gorton-Green-lane.

The gates which shut across the ends of the roads are not of sufficient width to extend across the railway, but Mr. Locke informed me, that he believes these are not public but merely occupation roads, and if so the Act does not require that the gates, when thrown open to passengers along the carriage-roads, should close the railway. It will be necessary to ascertain how the matter stands, and I presume the secretary would be the best authority on this point. If Mr. Locke's impression should be correct, the Company are not bound to have gatekeepers at these crossings, but if the roads should turn out contrary to his opinion, and indeed to all appearance to be public roads, then lamps will have to be fixed upon them for night signals, and I apprehend they will have to be so constructed as to shut across the railway when the carriage-way is left open.

During my inspection a person, representing himself to be the owner of land on both sides of the railway, complained that field-gates had not been put up to give him the means of crossing from one part of his property to another, without going some distance along the railway; and I saw another person driving cows along the line in consequence of a similar omission. It will of course be proper that the stipulations in the Act of Parliament for this railway should be carried into effect in these matters before the line can be opened.

The tenders to be used on this railway are to have four wheels, and the engines six, of which four are to be coupled.

The carriages are on four wheels; those of the first-class are similar to the Grand Junction carriages. Those of the second-class have open sides; and the third-class carriages are without roofs or seats.

I have the honour to enclose a time table, a list of the officers and servants of the Sheffield and Manchester Company, and the proposed Code of Regulations for their guidance.

To the first I object on the ground of its being intended, as I have already stated, to run trains in both directions. On the second I have no observations to make, but in the last I have to propose certain alterations which I will bring under your Lordship's consideration in a separate report.

I have, &c.,
FREDERIC SMITH, Lt.-Col. R. E.
Inspector-General of Railways.

The Earl of Ripon,
&c. &c.

LETTER sent to the Sheffield and Manchester Railway Company, relative to Sir F. Smith's Report on the Opening of the Line.

SIR,

Board of Trade, Whitehall, November 12, 1841.

I AM directed, &c., to inform you that in consequence of the report made to them by Lieutenant-Colonel Sir F. Smith, after his recent inspection of the works of the portion of the Sheffield and Manchester Railway which it is intended to open, their Lordships feel it their duty to recommend to the Directors not to open this portion of the line for public traffic until their engineer in chief shall have transmitted to this department a certificate, that the Newton Green embankment has been rendered perfectly safe for engines and trains to run over, at the proposed average speed upon the line, and also that the following works have been completed, viz.,

The fencing throughout.

The ballasting of the line where it was defective at the time of the inspection.

The fixing of the mile posts.

The erection of proper day and night signals at the several stations.

Their Lordships further recommend that the practice of running engines, tender foremost, with passenger trains, should not be adopted, and as Sir F. Smith is of opinion that the proposed arrangement of starting trains from both termini nearly at the same time will be attended with danger, they recommend that at all events the Company should be content with running trains at alternate hours from the termini until the ensuing spring, when the line will be in more perfect order, and the servants more experienced in their duties.

They recommend also that a moderate rate of speed should on no account be exceeded during the winter months, and that even after the Newton Green embankment is put into a state to allow trains to pass with safety, a regulation should be issued requiring the drivers of engines to pass over it at a very moderate speed, and that it should be made the especial duty of some confidential and intelligent person to examine the shores before the passing of each train, to see that they are properly wedged up.

Sir F. Smith observes in his report, that the gates at two level crossings were not sufficient to form a fence across the railway so as to prevent cattle, &c. from straying upon the railway when the gates were opened to allow a passage along the road; also that complaints had been addressed to him of the Company's not having erected proper field-gates, owing to which omission the occupiers of adjoining lands were compelled to drive cattle, &c. along the railway, which Sir F. Smith saw done in one instance.

Their Lordships consider it very important that these omissions should be rectified, and that the railway should be secured from the danger resulting from cattle or horses remaining upon it longer than is absolutely necessary.

The Secretary of the
Sheffield and Manchester Railway Company.

I am, &c.,
S. LAING.

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No. 16.

NORTHERN AND EASTERN RAILWAY.

GIVING Notice of Opening the Line from Harlow Road to Spellbrook, a distance of Four Miles, on the 11th October.

(Northern and Eastern Railway,)

MY LORDS,

Office, High Street, Shoreditch, September 11, 1841.

By order of the Board of Directors of this Company, I have the honour hereby to give your Lordships notice, that a further portion of this line of railway will be opened on and after the 11th day of October next, viz., from the Company's present terminus at Harlow Road to a place called Spellbrook, being a distance of four miles.

To the Right Hon. the Lords of the Committee
of Privy Council for Trade.

I have, &c.,
WILLIAM BOURNE, Secretary.

IN reply to Letter from this Office of the 20th, relative to the Date of the Notice of Opening a further portion of the Line.

SIR,

Northern and Eastern Railway,
Office, High Street, Shoreditch, September 22, 1841.

I HAVE had the honour to receive your letter of the 21st instant, pointing out a discrepancy between the date and the post-mark of my letter received by you yesterday. The letter certainly was not dispatched from this office till the date of the post-mark, though written for the purpose of being sent on the 11th instant; it was, I beg leave to assure their Lordships, a total inadvertence that the letter so dated should have been forwarded without an explanation, and without explicitly asking the favour of their Lordships to allow the opening adverted to, to take place, as if the letter had been forwarded on the 11th instant as intended.

I am instructed by the Board of Directors to state these facts to you in detail, in order that their Lordships may not allow an oversight on the part of the writer to operate to their prejudice, but be pleased to permit the further opening of the railway from Harlow Road to Spellbrook to take place on the 11th of October as requested.

I beg leave to offer my humble apology for the trouble I have occasioned.

S. Laing, Esq.,
&c. &c.

I have, &c.,
WILLIAM BOURNE, Secretary.

LETTER sent to the Northern and Eastern Railway Company, in reply to their Letter of the 22nd, relative to the Opening of a further portion of the Line on the 11th October.

SIR,

Board of Trade, Whitehall, September 23, 1841.

I AM directed, &c., to inform you that as the neglect in forwarding the notice of the intention of the Northern and Eastern Railway Company to open a further portion of their line, appears to have arisen from inadvertence, their Lordships will not object to the opening taking place on the 11th October, if the line is then in a fit state. Their Lordships request that notice may be given as soon as possible of the day when the portion about to be opened will be completed, and ready for inspection.

The Secretary of the
Northern and Eastern Railway Company.

I am, &c.,
S. LAING.

REPORT of Lieut.-Col. Sir Frederic Smith, on that portion of the Northern and Eastern Railway, between the Harlow Road and Spellbrook.

MY LORD,

Board of Trade, Whitehall, November 19, 1841.

I HAVE the honour to acquaint your Lordship that I have this day inspected a portion of the Northern and Eastern Railway which the Directors, in conformity with their notice of the 10th instant propose to open to the public, on the 22d instant. This portion is four miles in length, and extends from the present northern terminus at Harlow, to another temporary terminus at Spellbrook, making the entire railway distance from the last named place to Shoreditch about 30 miles. There is not, on that part of the railway about to be opened, any engineering work of such importance as to require particular notice.

The cuttings and embankments are of moderate dimensions, and their slopes seem to stand as well as can be expected for a new line, at this season of the year.

The fences are of a very satisfactory description, the ballasting sufficient, and the whole of the mile posts have been put up.

The bridges appear to be in conformity with the Act, and of adequate strength,

I travelled with an engine and a train of carriages in both directions on the *western* line of rails, which I found in good order, but the rails of the *eastern* line are only laid for about two miles out of the four.

There can be no question that the safety of a railway is much increased by its being freed from the gangs of the contractor's workmen before it is opened for the public traffic, and therefore it is an additional source of danger if the first line is used for passenger-trains while the workmen are employed in laying the second line. Under this view, although with proper regulations a single line of rails may be worked with safety, yet when the railway is to have a double line, it is, in my opinion, much more prudent to defer the opening till both lines are fit to receive the public traffic. In the present case the second line will, in all probability, be laid in six or seven days, and therefore it would have been more satisfactory to me if the opening had been altogether postponed till then. As the law stands at present, however, the Lords of the Council have not the power to order such a postponement, and the only course is to recommend extreme caution to be enforced by the Company, not only to guard against collisions between the trains that are to run in opposite directions, but also to prevent collisions with contractor's waggons, and to diminish the chance of accidents from materials being placed on the rails, or from switches being improper left in connexion with them.

The four miles of ground about to be opened should not be run over in less than 15 minutes during the winter; and I would suggest that, until the second line is used, a trustworthy officer of the Company should travel with each train after dark, over the new portion of railway, to see that no precaution is omitted that may be necessary for the public safety.

The stations are "Sawbridgeworth" and "Spellbrook," at both of which very sufficient accommodation is provided for the passengers.

At the former place there is a level crossing of a public road, and it is desirable that a communication should be made to the Secretary of the Company to ascertain whether this crossing, and two foot-paths which also cross on the level, have been sanctioned according to the Acts of Parliament.

The whole of the engines, tenders and carriages are on six wheels, and the traffic of the line seems to be well managed, much attention being paid to preserve considerable intervals between the trains, and to keep the permanent way in good order.

I have, &c.

FREDERIC SMITH, Lt.-Col., R. E.
Inspector-General of Railways.

The Earl of Ripon,
&c. &c. &c.

RELATIVE to the Opening of the Line from Harlow Road to Spellbrook.

SIR,

High-street, Shoreditch, November 23, 1841.

WITH reference to my letter of yesterday, I am instructed by the Committee of Management of this Company to state to you, that the further portion of this line of railway from Harlow-road to Spellbrook was opened yesterday; and that the recommendations of the Committee of Privy Council for Trade shall be strictly enforced.

I am, &c.

S. Laing, Esq.,
&c. &c.

WILLIAM BOURNE, Secretary.

DRAFT sent to the Northern and Eastern Railway Company, relative to opening the Line from the Harlow Road to Spellbrook, &c.

SIR,

November 22, 1841.

I AM directed, &c., to inform you that Lieut.-Col. Sir F. Smith has reported to their Lordships that only one line of rails is completed on the portion of the Northern and Eastern Railway, which it is proposed to open; and that as the danger to the public is considerably increased by using a single line of rails while a second line is in course of formation, he would have considered it more prudent to defer the opening until both lines were finished, which might be done in six or seven days. Their Lordships are of opinion that this would be the most satisfactory course to adopt, and at any rate they must recommend extreme caution to be used in guarding against collisions both with trains running in opposite directions and with contractor's waggons; and also great care in avoiding accidents from materials being left on the rails, or from switches being placed wrong.

Their Lordships further recommend that the four miles of ground about to be opened should not be run over in less time than 15 minutes during the winter, and that if the line is opened before the second line of rails is completed, that a trustworthy person should travel with each train after dark over the new portion of the railway, to see that no precaution is omitted that may be necessary for the public safety.

Sir F. Smith having reported that a public road is crossed on a level by the new portion of the railway, I am directed, &c., to inquire whether such level crossing has been duly sanctioned by two justices, as required by the Company's Act.

I am, &c.,

S. LAING.

The Secretary of the
Northern and Eastern Railway Company.

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Reports relating to
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RELATIVE to that portion of the Letter from this Office of the 22d instant, about the Railway crossing a Public Road on a Level.

SIR,

High-street, Shoreditch, November 24, 1841.

I AM instructed, in reply to that part of your letter of the 22d instant which relates to the new portion of this railway crossing a public road on the level, to inform you that the 4th of Victoria, cap. 24, sec. 14, provides that certain public roads therein mentioned may be crossed, (without the sanction of two justices of the peace,) and that the Company's officers being under the impression that the public road in question was similarly provided for under their original Act, such sanction has not been procured.

I am instructed by the Directors of this Company to express their regret that this oversight has occurred, and to inform you, for the information of their Lordships, that immediate steps shall be taken to procure the consent required by the Act of Parliament.

S. Laing, Esq.,
&c. &c.

I am, &c.,
WILLIAM BOURNE, Secretary.

STATING that the Company have obtained the consent of Two Justices of the Peace to the Crossing of the Public Road on a Level by the new portion of the Railway.

SIR,

High-street, Shoreditch, November 25, 1841.

WITH reference to my letter of yesterday, I beg leave to inform you that the consent of two justices of the peace, viz., of Captain Hotham, and Charles Philips, Esq., has been obtained to the crossing of the public road on the level by the new portion of this railway, adverted to in your letter of the 22d instant.

S. Laing, Esq.,
&c. &c.

I am, &c.,
WILLIAM BOURNE, Secretary.

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No. 17.

LONDON AND SOUTH WESTERN RAILWAY.

GIVING notice of the intended opening of the Gosport Branch on July 26.

Nine Elms Station, June 26.

IN pursuance of an Act of Parliament passed in the fourth year of the reign of Her present Majesty, intituled, "An Act for Regulating Railway," your Lordships are requested to take notice that it is the intention of the London and South Western Railway Company established and incorporated by an Act of Parliament passed in the fifth year of the reign of His late Majesty King William the Fourth, intituled, "An Act for making a Railway from London to Southampton," and acting under and by virtue thereof, and of four other Acts of Parliament respectively passed in the 1st 2nd, 4th, and 5th years of the reign of Her present Majesty, to which said Company, the railway, or portion of railway hereinafter mentioned belongs, after the expiration of one calendar month from the day of the date hereof, to open for the public conveyance of passengers and goods a branch railway, with the works and conveniences in connexion therewith, now in course of construction, and commencing at or in a field in the parish of South Stoneham, numbered 20 in the said parish, on the plan of the said railway from London to Southampton, deposited with the clerk of the peace for the county of Hants, in pursuance of the Act of Parliament secondly hereinbefore mentioned, and terminating at or near the Spring Gardens-road, in the parish of Alverstoke, in the said county, near the entrance to the town of Gosport, called Doublegate, and commonly called "the Gosport Branch of the London and South Western Railway."

To the Right Hon. the Lords of the Committee
of the Privy Council for Trade.

ALFRED MORGAN,
Secretary to the said Company.

REPORT of Lieutenant-Colonel Sir Frederic Smith, on his inspection of the Gosport Branch of the South Western Railway, previous to its opening.

MY LORD,

Winchester, November 28, 1841.

PURSUANT to your Lordship's instructions, I have made a minute and careful inspection of the Gosport branch of the London and South Western Railway, preparatory to its being opened to-morrow for the public traffic, in conformity with the notice given by the Directors of the Company on the 19th November, and I have the honour to lay before you the following report:—

This branch, which diverges from the main line at Bishopstoke, and terminates near the outside of the fortifications at Gosport, is 15 miles in length, and as Bishopstoke is five miles from Southampton; the railway distance between the latter place and Gosport is 20 miles, and between Gosport and London 87 miles.

The terminal stations are Bishopstoke and Gosport, and the intermediate stations are Botley and Fareham, which divide the line into nearly three equal parts.

On the 26th instant I commenced, and on this day I have completed my inspection.

Between Bishopstoke and Botley, and between Fareham and Gosport, I found the permanent way, and the bridges, cuttings, and embankments generally in good order for a new line, the exceptions being two slips of an embankment on the latter portion, and one slip in the former, and an imperfect drainage of the cuttings. Some of the works on the central subdivisions, however, namely, between Botley and Fareham, were on the 26th in so unsatisfactory a condition as to create in my mind very serious doubts of the propriety of the line being opened on the day appointed. The operations that have since been performed have improved the line, but still I am strongly impressed with the necessity of extraordinary precautions being used in conducting the traffic if the Directors persevere in their intention of opening as proposed.

The chief works on the central portion of the line requiring particular notice are the Funtley embankment and viaduct, and the Fareham tunnel.

The embankment is about three miles and a quarter from the Botley station. Here a slip of about 40 yards in length had taken place, so as to render the "down line" altogether impassable on the 26th instant, the subsidence having been such as to remove the ground in which the sleepers had been supported. This slip, as well as the defects in other parts of the earthwork and in the viaduct, which I shall shortly mention, were caused by the heavy rain of the last two months; and I think that the engineer-in-chief, Mr. Locke, has judged wisely in not attempting to remedy the evil by bringing, at such an unfavourable season, fresh soil, saturated with moisture, to fill up the cavities caused by the slips. Instead of this I found him engaged in preparing a timber frame-work for the support of the down line of rails on the Funtley embankment; and having used extraordinary exertions, this part of the road is now in a state to admit of the passage of the trains at a low rate of speed. The plan he adopted was to drive at intervals of 12 feet apart piles through the part of the embankment which had remained stationary. These piles were driven about five feet into the solid ground, and cross bearers have been fixed on them to support the longitudinal timbers, and on these the transverse sleepers are placed to receive the chairs and rails.

Two other rather heavy slips have taken place about 12 miles from the junction. Here Mr. Locke has followed the arrangement he adopted at Funtley in respect to the longitudinal bearers; but he has supported these, not upon piles as at Funtley, but upon upright shores resting on sleepers which lie in the direction of the line of rails. This is not so satisfactory an arrangement as if the supporting vertical timbers had stood on solid ground, or as if they rested on transverse sleepers, because, should any slip or subsidence take place in the lower part of the embankment, a corresponding deflection of the bearers and rails would naturally follow.

As temporary expedients, however, both modes may be found to answer the purpose, but they must be narrowly and constantly watched, and no time should be lost when the weather may permit in making up the embankments to their proper width at the top, regulating the slopes, and securing the base according to the nature of the soil that may be used.

It is true that the trains might run on this timber work for a great length of time without accident (similar expedients having been successfully used on other lines), but still it is a risk that it is desirable to avoid, for if the engine or one of the carriages should from breaking an axle or other cause get off the rails, and take a course towards the *outside* of the embankment, fatal results would in all likelihood ensue.

The next work of importance is the Funtley viaduct. It is of brickwork, and of the extreme height of 35 feet.

Owing to the heavy pressure of the earth between the wing walls at both ends of this viaduct, which pressure has been greatly increased by the late continued rains, these walls have been forced out, and at the south end, the arch adjoining the embankment has been fractured vertically on both sides, nearly from the springing to the key.

The corresponding wing walls at both ends of the viaduct have been cramped together, but it would seem that there must still be considerable pressure upon the inside of these walls, as the "burs" have partially drawn, and therefore a further dislocation will in all probability take place, unless the proper means are adopted to lighten the internal pressure.

After my inspection on the 26th, Mr. Locke directed that a part of the earth between the walls should be taken out and timbers laid from the crown of the arch to the embankment to support the rails. This has been done, and I have since passed over the road several times with engines and trains at a moderate rate of speed. However, this is by no means a desirable state of things, and it is, in my opinion, only remediable by one of the four following means:—

- 1st. By taking down and rebuilding the wing walls with greater solidity.
- 2nd. By placing the rails on timbers supported by piles driven into the solid ground.
- 3rd. By removing the "filling-in earth" to a greater depth than has yet been done, and placing shores or trestles under the longitudinal timbers; or lastly, by taking out the whole of the "filling-in earth," and substituting brick piers, on which the timbers may be supported.

The season is unsuitable for the first or the last course; Mr. Locke has objections to the second, and therefore there remains only the third, which he has expressed his willingness to adopt, should any further failure prove it to be necessary. Indeed I must here observe that Mr. Locke has evinced great readiness to carry out any suggestion that I have offered; and want of time alone has interfered to prevent my obtaining that further security which I consider desirable, though, perhaps, not altogether indispensable for the public safety, provided the rate of speed of the trains be very moderate, and the works be carefully watched. I have therefore endeavoured to gain my object by police and other precautionary measures, in which matters I have been met in a satisfactory manner by Mr. Chaplin, the chairman, and the other

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Directors who accompanied me along the line, and by Mr. Locke, the chief engineer ; and I can only regret that they did not coincide with me in thinking it necessary to adopt my suggestion of deferring the opening, which I think would have been the more prudent and advisable course.

At a different season of the year, with every probability of a favourable change of weather, I should have been less desirous to obtain a postponement, but those parts of the line which are now defective having been rendered so chiefly by bad weather, there appears but little chance of their improvement in the winter, and on the contrary, we have reason to apprehend that the same cause may lead to further and even more serious failures. The safeguard of the public, supposing the opening to take place, will therefore mainly consist in a very low rate of speed, for in all new lines danger is to be apprehended if the trains run at high velocities ; and this danger is much increased when the embankments are lofty, and have shown symptoms of subsidence, and when from the want of sufficient drainage the ballast is in a bad state. The drainage in this case is defective in some of the cuttings, which have become so saturated during the late continued rains that the engineer has been unable to carry off the water in a satisfactory manner. These points will require early and close attention.

For the above reasons, I recommend, until the works are more firm and consolidated, that a very low rate of speed should be used over the greater part of the branch railway, and especially over the central portion of it.

I now come to the Fareham cutting and tunnel.

These works pass through a soil which has baffled all calculation.

In excavating both in the cutting and tunnel, the workmen were obliged to blast a great proportion of the ground with gunpowder, and yet from exposure to the wet it has become almost semifluid ; and in the cutting there is scarcely any slope at which it would stand. At the north end of the tunnel the slopes have, in consequence, lost all regularity of form, and pour over the retaining walls upon the rails.

Your Lordship is aware, from my report of the 25th August, that on the morning of my inspection of this branch, preparatory to the then contemplated opening of the 28th August a portion of about 100 feet in length of this tunnel fell in. Other slight failures had previously, and have subsequently taken place, indicating still more the treacherous nature of the soil.

I have not discovered any cause for apprehension in respect to this tunnel in my present inspection of it, but in my former Report I observed that the Lords of the Council could take no responsibility in such works as tunnels, even under ordinary and favourable circumstances, as their officers have no official knowledge either of the sufficiency of the sectional strength of the sustaining arches and side walls, and of the inverts, or of the quality of the work of which they are composed.

The force of this observation applies much more strongly in such a case as the present, where the work has already given evidence that it is exposed to great and sudden pressure, and therefore the whole responsibility of using this tunnel must rest with the Directors of the Company ; for they have had the means, by frequent personal inspections, and by the reports of their engineer, of arriving at a full knowledge of all the circumstances connected with this work, and whether if its form has undergone any change, that change has been to such an extent as to afford any ground of apprehension for the safety of the work.

With two exceptions it is tolerably dry ; but in one place in particular, the wet comes through the arch to such an extent, that it is desirable some means should be forthwith adopted for carrying it off ; for by passing through the arch it will not only gradually and seriously impair the strength of the brickwork, and lead to serious results, but it will make the road beneath in an insecure state.

It is right that I should state that Mr. Locke, who has closely watched the operations of forming this tunnel, has assured me that he has not the slightest apprehensions respecting it.

I am not aware of any important deviation from the Act of Parliament excepting in the substitution of a tunnel of about 90 yards in length, instead of a cutting at about eight miles from the junction ; and I observed that the mile-posts have not been erected.

There are no level crossings of turnpike or public roads.

The station-houses are fitted up with great attention to the comfort of the passengers, and sheds have been also erected for their convenience opposite to the booking-offices.

It would have been more satisfactory to me had the Directors determined, in consequence of the recent failures in the works which I have alluded to, consented to a postponement of the opening until the best remedies could have been fully applied in every case ; for although there is no work presenting an appearance of positive danger, still there is, in my opinion, a degree of insecurity, and the state of the works is not such as would justify the trains being run on every part of the line, at what is intended to be the average speed of similar gradients ; and I conceive that a line ought to be, when opened to the public traffic, in such a state as to admit of this average speed being used, or otherwise too great discretion is vested in the engine-drivers. However, the Directors have signified to me that, relying on the experience and skill of the engineer and contractor who have expressed no fear of the result, and feeling that it would be a great disappointment to the public to defer the opening of the line beyond tomorrow, they cannot consent to the postponement. The responsibility of the opening, therefore, rests with them, but they have at the same time expressed their readiness to adopt, as far as may be practicable, such precautionary measures as I may think it my duty to suggest.

Under these circumstances I would recommend,

1. That the greatest speed on any part of the branch line should not at present exceed 20 miles an hour, and that over the more treacherous portions that speed should be greatly diminished.

2. That at the Funtly viaduct, and at all those points where the rails are supported on timber, or where the embankments or cuttings wear a suspicious appearance, watchmen, competent to judge of the security of the work, should be placed, and that no train should pass these points unless the signal of safety is exhibited to them.

3. It would be an increased protection to the public if trains were not at present to run over this branch line after dark; for any failure that might suddenly arise would then be discovered, and guarded against before the arrival of the trains.

This precaution should be strongly urged on the Directors, and should not be relaxed during the winter.

4. The Fareham tunnel, and the cutting north of it, should be passed through by a careful man before the arrival of any train, to see that the rails are clear; and the speed through the tunnel should be reduced until the ballast has become more firm and dry.

I have, &c.

FREDERIC SMITH.

The Earl of Ripon,
&c. &c.

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LETTER sent to the London and South Western Railway Company relative to Sir F. Smith's Report on the Opening of the Gosport Branch.

SIR,

Board of Trade, Whitehall, November 29, 1841.

THE Lords, &c. have had before them Lieutenant-Colonel Sir F. Smith's Report on the Gosport Branch of the London and South Western Railway, in which that officer states, that owing to the defective condition of some of the works, and the present very unfavourable state of the weather and near approach of winter, when further and perhaps more serious failures in the works, which are in a great part composed of treacherous materials, may be apprehended, he is of opinion that it would be very decidedly the more prudent course to postpone the opening for public traffic for the present. Their Lordships direct me to inform you that they quite coincide with this opinion, and that if the Directors adhere to their intention of opening the line, it must be distinctly understood that they do so entirely on their own responsibility.

Should this course be adopted, their Lordships strongly recommend that, in order to afford the public the greatest possible amount of security under the circumstances, the branch line should, during the winter months, be only worked by daylight and at a very moderate rate of speed; and further, that not only at every point where failures have occurred, but also at the Fareham tunnel and cutting, and at all other places where the nature of the soil or the present state of the works gives the slightest ground for apprehending further failures, an intelligent and trustworthy person should be posted to give warning of any danger to approaching trains.

These precautionary measures should not, in their Lordships' opinion, be relaxed until the branch line has been again examined by the Inspector-General, and found in a satisfactory condition.

I am, &c.,

S. LAING.

The Secretary of the
London and South Western Railway Company.

IN reply to Letter from this Office of the 29th November; also stating that the Gosport Branch is closed, owing to a Slip at the Fareham Tunnel.

SIR,

Nine Elms Station, December 3, 1841.

I HAVE the honour to acknowledge the receipt of your letter communicating the opinion of Sir Frederic Smith that it would not be prudent to open the Gosport branch line of railway.

I am instructed by the Directors to acquaint you that, in coming to a determination to open this branch, they were influenced by the advice of their engineer-in-chief; and I beg to draw your attention to the accompanying Report (bearing date 30th November) for the reasons which led him to give such advice.

The Directors desire to add that all the suggestions relative to the limiting the speed of the engine, the placing additional police, discontinuing the early and late trains (as shown in the accompanying hand-bill) which their Lordships suggested, were immediately ordered to be, and were, actually carried out.

From the second report of their engineer (a copy of which is enclosed), it appears that, in consequence of a slip which occurred this morning, the line could only be kept open with difficulty, and probably with some risk.

The Directors therefore instruct me to acquaint you, for the information of the Lords of the Committee of Privy Council for Trade, that the orders given by the engineer (as stated in his report of this day's date) have been confirmed by them, and that for the present the trains will be discontinued.

I have, &c.,

ALFRED MORGAN, Secretary.

S. Laing, Esq.,
&c. &c.

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GENTLEMEN,

Southampton, November 30, 1841.

THE Secretary has this day forwarded to me the copy of a letter received from the Lords of the Committee of the Privy Council for Trade, and I lose no time in stating to you the reasons which induced me to recommend the opening of the Gosport branch, and why I think it would be inexpedient now to close it.

It is upwards of three months since the failure of the earth at the Fareham tunnel compelled you to postpone the opening of this line. At that period nearly all the cuttings and embankments were completed; and although since that time several slips have taken place in some of them, still the rails used by the ordinary ballast-waggons have never been interrupted.

The season has certainly been one of the most trying description, but I think it is but reasonable to suppose that the consolidation of these works during the last three months has given to them much greater stability than they originally had, and that what has heretofore been done for carrying on the ordinary works may now suffice for the transport of passenger-trains.

The material through which these works have been made is no doubt very treacherous, more so than any I have yet had to contend with; but the difficulties of this material have been obviated by the adoption of many very expensive measures of precaution, which ought in some degree to lessen the fears that are entertained as to its absolute insecurity.

The embankments in almost every case are made of an extra width, and in the cuttings, close under drains have been made, so as to avoid the tendency to slip which the ordinary side ditches sometimes produce.

The brickwork I believe to be strong and well executed, and indeed I may most safely say that there is not a point on which I could fix for the probable occurrence of a single failure.

The recent heavy rains have no doubt produced some slips, both in the cuttings and embankments; and up to the period when Sir Frederic Smith made his examination of the line, every one of those slips had been protected by timber stages, so placed as to meet the exigency of each case; and I knew then of no reason why the line should not be opened with perfect security to the public, and I could not therefore hesitate in recommending it.

The continued wet weather this week has no doubt produced fresh slips, but means have been taken to prevent interference with the trains; already have proper men been stationed to give any signal that may be required, and I will see that the requirements of their Lordships of the Privy Council in this particular be strictly complied with.

I would add, also, that the suggestions their Lordships make as to running no trains in the dark may so far be adopted as to dispense with the trains which leave Gosport at half-past six in the morning, and Bishopstoke at twelve minutes after eight in the evening.

If this were done there would be no train on the line later than a quarter-past six in the evening, nor earlier than half-past eight in the morning, hours before which very vigilant inspection of the whole line could be made.

With these precautions I see no reason for closing the line; a continuation of wet weather might render it necessary to do so, and should that occur I shall not hesitate so to advise you; but if, on the contrary, the weather becomes dry and no fresh contingency should arise, the road will, I think, within a week become very firm and good.

I am, &c.,

JOSEPH LOCKE.

The Directors of the
London and South Western Railway Company.

GENTLEMEN,

Nine Elms Station, December 3, 1841.

It is my duty to report to you that this morning a further slip of the ground took place in the open cutting between the tunnels at Farham, which covered the rails on both sides and prevented the trains from passing. On my arrival at the spot, I found the men busily employed in removing the earth so as to clear one line, but in consequence of the unfavourable weather, and the risk there was in removing the earth so contiguous to the tunnel too rapidly, I thought it more prudent to order them to desist. I was influenced in this decision by the letter received from their Lordships of the Committee of Privy Council for Trade, already noticed in my former report, in which an opinion is given that owing to the wetness of the weather and the unfavourable nature of the material, their Lordships did not consider it advisable to open the line.

I was already aware of the opinion of Sir Frederic Smith, that it would be better to defer the opening, but I nevertheless felt quite confident that when he made his inspection of the line there was no defect which could not be remedied, and no omission which could not be supplied, so as to carry on the traffic with perfect security to the public. It were unnecessary for me to state that I was not mistaken in that belief, for since Monday, in addition to the ordinary trains, we have carried nearly 1000 troops from Winchester to Gosport, and no accident of any kind has occurred.

But although I then felt this certainty, I could not foresee the occurrences produced by the continued rains during the week, but the moment I felt that the safety of the trains might by possibility be compromised, and keeping in view the opinion of Sir Frederic Smith and my own

pledge to you, I did not hesitate to give directions to discontinue the booking of passengers by the subsequent trains.

I know that your own desire to make the safety of the passengers paramount to all other considerations will induce you at once to sanction the course I felt it necessary to take this morning, and for the present to close the line. This course will enable us the more satisfactorily to remove the obstruction which under ordinary circumstances might be accomplished in a few days; but I have already seen so much of the effect of wet on this most treacherous soil, that under any circumstances I would not advise a further opening until the weather has changed.

The Directors of the
London and South Western Railway Company.

I am, &c.,
JOSEPH LOCKE.

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No. 18.

BOLTON AND PRESTON RAILWAY.

REPORT of Lieutenant-Colonel Sir Frederic Smith on the proposed Opening of a further portion of the Bolton and Preston Railway.

MY LORD,

Manchester, 22nd December, 1841.

I HAVE the honour to acquaint your Lordship that, pursuant to your instructions of the 13th instant, I have this day inspected that portion of the Bolton and Preston Railway which the Directors of that Company intimated in their notice of the 11th instant that they intended to open in the course of to-morrow for the public traffic.

As I did not observe, in a careful examination of the works, any objection to this intention being carried into effect, I informed Mr. Adie, the resident engineer, that I should make to your Lordship a favourable report of their state, and I therefore conclude that the opening will take place as proposed.

In my report of the 24th December, 1840, I described that part of the Bolton and Preston Railway which was opened to the public at the beginning of the present year. It was nine miles and one-third in length, consisting chiefly of a single line, and the present portion, which has also only a single line, is two miles and a quarter in length, and extends to the station at Chorley.

I found the cuttings and embankments in good order; the ballasting very satisfactory, and the fences complete throughout.

The bridges over the railway, and the crossings are in conformity with the Act of Parliament, and I am not aware of any deviation from it.

One occupation bridge, which is to have a wooden superstructure supported on stone piers, is not quite finished. The Company should cause this bridge to be completed forthwith, and should be called upon to take the necessary precautions for the public safety while it is in progress.

The station-house at Chorley may be finished in two or three days, and appears calculated to afford the requisite accommodation to the public.

The work of chief importance on that part of the line now under consideration is the Cowlin viaduct. This elegant structure is of stone and consists of eight semicircular arches of thirty feet span.

The extreme height from the footings to the top of the parapet is 67 feet 10 inches.

The piers, which are built hollow, are four feet thick at the top and five feet at the plinth, battering six inches on each side in a height of 32 feet.

The walls are 18 inches thick, and therefore have an interval of one foot between them at the top and two feet at the bottom. At every fourth course there are three bond stones to tie together the face walls of each pier.

The arch stones at the crown are only 18 inches deep.

This viaduct has at present no settlement, but its proportions are so unusually slight that I think it ought to be carefully watched throughout the winter, especially as the natural foundation was bad. The piers have been supported on piles of about 24 feet in length and 12 inches square.

They were driven by a ram of 13 cwts., until, with a fall of 12 feet, the penetration was only one-eighth of an inch at each blow.

The Bolton and Preston Company are still furnished with carriages and locomotive power by the Manchester and Bolton Company, and I understand that it is the intention only to run trains in one direction at the same time, so that the engine that will take a train down to Chorley will bring the return train to Bolton.

I trust that this cautious mode of working the line will not be relaxed, and that no attempt will be made to work from both termini at the same time, with a passing place in the middle, a system which I consider very objectionable for reasons stated in my report on the Sheffield and Manchester Railway.

I have, &c.,
FREDERIC SMITH, Lt.-Col., R. E.,
Inspector-General of Railways.

The Earl of Ripon,
&c. &c.

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No. 18.
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Preston.

LETTER sent to the Bolton and Preston Railway Company, relative to Sir Frederic Smith's Report on his Inspection of the Line.

SIR,

Board of Trade, 28th December, 1841.

I AM directed, &c., to inform you, that Lieutenant-Colonel Sir F. Smith has reported to their Lordships, that he did not in the course of his recent inspection of the portion of the Bolton and Preston Railway about to be opened, observe any objection to the intention being carried into effect. He reports, however, that the Cowlin viaduct is built of unusually slight proportions, and ought to be carefully watched throughout the winter, especially as the natural foundation is bad, a precaution which their Lordships strongly recommend to the Directors; as also that the present system of not allowing trains to run in opposite directions at the same time should be persisted in until a second line of rails is completed. Sir F. Smith further reports that one occupation bridge is unfinished, and that the Company should cause it to be completed without loss of time, and in the mean time that the necessary precautions should be taken for the public safety while the work is in progress.

Subject to the above observations, their Lordships see no objection to the opening.

I am, &c.,
S. LAING.

The Secretary of the
Bolton and Preston Railway.

VI.—RETURNS RELATING TO LOCOMOTIVE ENGINES.

No. 1.

NORTHERN AND EASTERN RAILWAY.

SIR,

Office, High Street, Shoreditch, 12th October, 1841.

I AM instructed by the Directors of this Company to acknowledge the receipt of your letter of the 11th instant, on the subject of locomotive engines, and to inform you that they have directed their engineer, Mr. Bidder, to furnish you with ample answers to the various questions contained in your said letter.

I am, &c.,

S. Laing, Esq.,
&c. &c.

WILLIAM BOURNE, Secretary.

Appendix.

VI.

Returns relating
to Locomotive
Engines.

No. 1.

Northern and
Eastern.

No. 2.

NEWCASTLE-UPON-TYNE AND CARLISLE RAILWAY.

SIR,

Newcastle-upon-Tyne, 13th October, 1841.

I HAVE to acknowledge the receipt of your letter with inquiries as to the engines used on the Newcastle and Carlisle Railway. The information shall be sent as soon as it can be obtained from the engineers, &c.

I am, &c.,

G. R. Porter, Esq.,
&c. &c.

JOHN ADAMSON, Secretary.

No. 2.
Newcastle-upon-
Tyne and Carlisle.

No. 3.

GREAT NORTH OF ENGLAND RAILWAY.

SIR,

Darlington, 13th October, 1841.

I have the honour to return the following answers to the questions contained in your letter of the 11th instant:—

1. There are five passenger engines and six merchandize engines daily at work.
2. The passenger engines have all six wheels, cylinders 12 inches diameter, stroke 18 inches, diameter of driving wheels 5 feet 6 inches, fore and hind wheels 3 feet 9 inches diameter in two engines and 3 feet 6 inches in the rest; they have all outside bearings, and in two engines, built by Robert Stephenson and Co., the crank axle has two additional inside bearings. The weight in working order is supposed to be from 13 to 14 tons, of which at least one-third is on the front wheels.

The merchandize engines have all six wheels, cylinders 14 inches diameter, stroke 18 inches. The front and driving wheels are 4 feet 6 inches diameter, and are connected. The hind wheels 3 feet 6 inches diameter. One engine, employed in ballasting, has 13 inch cylinders and six wheels 4 feet in diameter: they all have outside bearings. The weight in working order is supposed to be upwards of 15 tons, and to be nearly equal on the front and driving wheels. None of the engines have been weighed.

3. The passenger engines are built by Robert Stephenson and Co., R. and W. Hawthorn, and Charles Tayleure and Co.

The merchandize engines by Charles Tayleure and Co., R. and W. Hawthorn, Jones, Turner, and Evans, and Fenton, Murray, and Jackson.

- 4 and 5. These engines were adopted by the Directors on the recommendation of the Company's late engineer-in-chief, Mr. Story; but they have no experience on which to ground an opinion as to the comparative safety of engines of a different description on this line.

6. Extra engines are employed when required.

7. The Company's regulations direct, that "No engine shall push a train, but always precede it, except in cases of necessity, and then shall not exceed 10 miles per hour."

8. The Directors do not consider the use of an extra engine in front as an additional source of danger; nor when used behind at a diminished rate of speed; but, as the latter opinion is questionable, the rule is made as stated above.

9. Engines with passenger trains are never allowed to run with the tender foremost. Engines with merchandize (coal) trains are allowed to run tender foremost at a speed not exceeding 10 miles an hour.

I have, &c.,

G. R. Porter, Esq.,
&c. &c.

W. O'BRIEN, Secretary.

No. 3.
Great North of
England.

Appendix.

VI.

Returns relating
to Locomotive
Engines.

No. 4.

Bolton and Preston.

No. 4.

BOLTON AND PRESTON RAILWAY.

SIR,

Bolton, 13th October, 1841.

IN reply to your letter of the 11th instant, I beg to state, that under an arrangement made with the Manchester and Bolton Railway Company, they supply the locomotive power used upon that portion of the Bolton and Preston Railway now open to the public, and that their engines work indiscriminately upon both lines, running through from Manchester to the present temporary terminus of the Bolton and Preston Railway and back again. I beg, therefore, to refer to the Report, which I presume you will receive from the Manchester and Bolton Company, for detailed information as to their engines.

2. The engines which have been worked on the Bolton and Preston Railway are all four-wheeled engines, with equal sized wheels coupled, or capable of being coupled, and about five feet in diameter.

3. I think the greater portion of the engines were made by Mr. Bury, of Liverpool, but I believe some are by other makers.

4 and 5. Under the circumstances already stated, and only nine miles of the line having been in use for public traffic since February last, the Directors of the Bolton and Preston Railway have, as such, had little experience in locomotives. One of the Directors, Mr. Hick of Bolton, is himself a maker of engines and has long been familiar with the subject, but, if his opinion be desired, it would be best had from him in his individual capacity. With reference to the general object of your circular, I can only express my own regret personally at not being enabled to ask or communicate Mr. Hick's opinions, as I believe there is no man in the kingdom whose opinions on this matter would be of more real value.

6, 7, 8. Extra engines are never employed on this railway in propelling trains, either in front of or behind trains.

9. The engines are never allowed to run with their tenders foremost.

I beg to acknowledge receipt of your favour of yesterday, and to tender the acknowledgments of the Directors for the acquiescence given to their request, as well as for your prompt attention.

I am, &c.,

S. Laing, Esq.,
&c. &c.

PETER SINCLAIR, Secretary.

No. 5.

BOLTON AND LEIGH RAILWAY.

No. 5.

Bolton and Leigh.

SIR,

Bolton, 13th October, 1841.

As the locomotive engines worked upon this line are the property of and under the exclusive control of Mr. John Hargreaves, as the lessee of the line, he is the only person who can correctly answer the inquiries contained in your letter of the 11th instant; I have, therefore, handed your letter to him, and I beg to state that he is preparing an answer to it.

Mr. Hulton, a gentleman having collieries upon the line, has two engines, one or other of which is used from time to time in the removal of his own coal upon a small portion of the line, about two miles in length only, but, as these engines are exclusively confined to this work and never employed in the public traffic, I apprehend they do not come within the scope of your enquiries.

I am, &c.,

S. Laing, Esq.,
&c. &c.

PETER SINCLAIR, Treasurer.

No. 6.

NORTH UNION RAILWAY.

No. 6.
North Union.

SIR,

Preston, 15th October, 1841.

IN compliance with your letter of the 9th instant, intimating the request of the Lords of the Committee of Privy Council for Trade, for returns to nine questions, and, referring to the order in which they are stated, I am directed to reply to the

1st. Seventeen engines belonging to the North Union Railway Company, besides engines belonging to private persons, carriers, and colliers, and six belonging to the Lancaster and Preston Railway Company.

2nd. This Company's engines consist of—

6 four-wheeled engines, having 5 feet 6 inch driving wheels, weight 10 tons, and 4 feet 6 inches on the front wheels; cranked axle and inside bearing.

4 four-wheeled engines, same as the foregoing except that the driving wheels are only 5 feet diameter.

1 four-wheeled engine, 4 feet 6-inch driving wheels, weight 2 tons, 3 feet 10 inches on front wheels, straight axle and inside bearing.

4 four-wheeled engine, 5 feet driving wheels, weight 12½ tons, 5 feet 15 inches on front wheels, cranked axles and inside bearing.

2 six-wheeled engines, 5 feet driving wheels, weight 13 tons, and about 5 tons on front wheels; cranked axle and outside bearing.

17 Total.

3rd. Jones, Turner and Evans.	4 engines.
Haigh Foundry Company	4 „
Hick and Son	4 „
Bourne and Bartley	1 „
Edward Bury	2 „
Charles Tayleure and Co.	2 „

Total . . 17

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Engines.
No. 6.
North Union.

4th. The Board decided in favour of four-wheeled engines originally, and have found no objections of such a nature as to induce them to change that form.

5th. Certainly not.

6th. An extra engine is stationed at Wigan, and generally propels (in assisting) the trains up the incline, and the trains have been sometimes assisted from Preston up the inclines in the same way; but there is a regulation to prevent the engines propelling, except on the inclines, of 1 in 100.

7th. Rarely behind except in the foregoing; if the engine goes all the way it is always put in front.

8th. In a small degree if proper care and caution is used.

9th. The Company's engines are not allowed to run tender foremost, except in the case of the extra engine returning down the incline to its station. The carriers' and colliers' engines have done so formerly on some occasions, but there is a rule made against it now.

I am, &c.,

G. R. Porter, Esq.,
&c. &c.

J. CHAPMAN, Secretary.

No. 7.

NEWCASTLE AND NORTH SHIELDS RAILWAY.

SIR,

Newcastle and North Shields Railway Office,
October 15, 1841.

No. 7.
Newcastle and
North Shields.

I HAVE been instructed by the Directors of the Newcastle and North Shields Railway to hand you the following replies to the inquiries contained in your favour of the 11th instant, which I trust will meet your approval:—

1. Five.

2. Two engines have the four front wheels coupled; the remaining three are uncoupled. The engines all have six wheels.

			Ft.	In.
Diameter of wheels .	Coupled engines driving wheels .		4	9
„ .	„ bearing „ .		3	6
„ .	Uncoupled engines' driving wheels .		5	6
„ .	„ bearing „ .		3	6
Weight of engines .	Coupled, about 13½	Uncoupled	11	
Weight on front wheels	Coupled . . . 5½	„	5	

The axles are all cranked underneath the engines, and the cylinder placed nearly horizontally; the bearings are the same as described by Mr. Stephenson in his work on the patent locomotive. None of the axles or bearings have ever failed.

3. Two engines were made by R. Stephenson, and three by Messrs. R. and W. Hawthorn, all of Newcastle.

4. The Directors never having used any but six-wheeled engines, cannot speak to this from their experience; but have always been of opinion that the six-wheeled engines are the safest, as they are less likely to leap off the rails.

5. See answer to No. 4.

6. Never.

7. Answered in No. 6.

8. The Directors have no experience to appeal to, for having always considered extra engines dangerous, they have never been used.

9. Never. The engine always runs first, the Directors considering the plan of running tender first a very dangerous one; and between the tender and the first passenger carriage a strongly-built luggage-van has always been run to diminish the concussion on the passenger carriages should the engine be thrown off the way, but which, on this railway, has never happened since its opening.

I have, &c.

S. Laing, Esq.
&c. &c.

WM. SWAN, Clerk to the Company.

No. 8.

ULSTER RAILWAY.

SIR,

Belfast, October 15, 1841.

No. 8.
Ulster.

I HAVE now the honour to annex replies to the questions propounded in your circular of the 11th instant.

1. There are five engines at present employed on this railway, and two others in course of delivery.

2. All the engines on this line are constructed with six wheels; the driving wheels of three are six feet diameter, with fore and hind wheels four feet diameter; the remaining engines have

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Engines.No. 8.
Ulster.

driving wheels of five feet six inches in diameter, with fore and hind wheels of three feet six inches in diameter. The weight of each engine is about 16 tons. The principal weight of the engine is on the driving and fore wheels, and this is regulated from time to time, as circumstances may require, by means of screws, or adjusting links, attached to the springs. The axles are five inches in diameter at the neck, and four inches and half at the centre, with three inches and half in bearings. The crank axles are six inches and half in diameter, with four in bearings.

3. Messrs. Sharp, Roberts, and Co., of Manchester, are the makers of all the engines referred to.

4. As the whole of the engines on this line have six wheels, and none with four, the Directors have had no experience as to the comparative merits of the two kinds. It may, however, be proper to add that the Directors were led to the conclusion at the commencement of the undertaking that engines with six wheels were the safest, and particularly so upon this line, where the gauge is six feet two inches.

5. The reply to No. 4 embodies this.

6. Extra engines are employed in cases of emergency.

7. The extra engine is applied in front, if the circumstances render it possible to apply it there.

8. The application of an extra engine in any position must necessarily form an additional source of danger.

9. Engines on this line do not run tender foremost unless in cases of emergency.

I have, &c.,

S. Laing, Esq.
&c. &c.

JOHN S. SMITH, Secretary.

No. 9.

YORK AND NORTH MIDLAND RAILWAY.

No. 9.
York and North
Midland.

SIR,

York, October 15, 1841.

I AM instructed by the Directors of the York and North Midland Railway Company to acknowledge the receipt of your circular of the 11th instant, and to furnish you with the following answers to the several questions therein contained :—

1. The number of engines employed on the York and North Midland line is 29, fifteen of which are in daily use.

2. The general construction of such engines is as follows, viz. :—

Passenger-engines are all on six wheels, one pair of driving wheels on each engine varying in size from five feet to five feet six inches and six feet diameter, with crank axle, with inside and outside bearings, the fore and hind wheels varying in size from three feet six inches to four feet nine inches diameter, with plain straight axles with outside bearings. The weight of the engines vary from 12 to 18 tons; the weight on the fore wheels from four to six tons. Cylinders varying from 11 to 13 inches diameter; length of stroke from 18 to 22 inches. Average speed of travelling 30 miles per hour.

The engines for luggage trains are all on six wheels; two pair of driving wheels complete one crank axle, with inside and outside bearings. The size of driving wheels vary from four feet six inches diameter to five feet diameter. The fore and hind axles are perfectly straight, and the weight of the engines vary from 15 to 20 tons; weight on the fore axle about 6 tons. Diameter of cylinders vary from 12 to 13 inches, and length of stroke from 18 to 20 inches. Speed 18 miles per hour.

3. Fourteen of the passenger-engines were supplied from the manufactory of Messrs. Robert Stephenson and Co., Newcastle-upon-Tyne; two from Shepherd and Todd, Leeds; one coupled engine from Turner, Ogden, and Co., Leeds; one ditto from Linton, Selby; six single engines made by Kirtley, Warrington; and one single and four coupled engines, made by Tenton, Murray, and Jackson, Leeds, were included in the stock of the Leeds and Selby Railway Company, which was purchased by the York and North Midland Railway Company when they became lessees of the Leeds and Selby line.

4. The Directors prefer six-wheeled engines, with one pair of driving wheels placed in the centre of the engine for passenger trains, which they consider to be the safest.

They particularize those furnished by Messrs. Robert Stephenson as being most perfect in detail, simple in arrangement and construction, and most durable.

For luggage-trains they prefer six-wheeled coupled engines as being most powerful and safe.

5. The Directors have not used any engines which they consider peculiarly dangerous, as they have never had any other than six-wheeled engines upon their line.

6 and 7. Extra engines are employed on the York and North Midland line in propelling trains; but the extra engine is invariably attached in front of the train.

8. The Directors are not led by experience to consider the use of an extra engine in front as any additional source of danger; but considerable danger is unquestionably incurred by the use of an extra engine behind a train.

9. Engines are not allowed to run tender foremost with passenger trains on this line, except a branch engine which runs between two road stations, a distance of three miles and a half. The engine is allowed to return tender first with light loads at a limited speed of 20 miles per hour, and empty coal carriage trains are conveyed by an engine running tender foremost at a speed not exceeding 18 miles per hour.

S. Laing, Esq.
&c. &c.

I have, &c.
G. BAKER, Secretary.

No. 10.

LANCASTER AND PRESTON JUNCTION RAILWAY.

October 18, 1841.

1. What number of engines are employed upon the Lancaster and Preston Railway?—Six engines belonging to this Company, but having arranged with the North Union Railway Company for the joint working of the two lines, the engines of each Company run promiscuously over the two lines.

2. What is the construction of such engines, specifying the number of wheels and their diameter, the weight of the engine, the weight on the front wheels, the construction of the axles and bearings, and any other particulars bearing upon the question of safety?—The six belonging to this Company have four wheels: driving wheels five feet diameter, front ditto three feet six inches diameter. Weight of engine ten tons nine cwt. and half; ditto on front wheels four tons one cwt. and three quarters. Crank axle. Inside bearings.

3. What are the names of the makers of such engines?—Edward Bury, Clarence Foundry, Liverpool.

4. What description of engines have the Directors been led by their experience to prefer, and for what reasons?—These engines have been in use more than 15 months, and no accident has ever occurred that could in anywise be attributed to the construction of the engine, and the Directors have every reason to be satisfied with them.

5. Have the Directors been led by their experience to consider any particular description of engine as peculiarly dangerous, and if so, for what reasons?—No.

6. Are extra engines ever employed upon the Lancaster and Preston Junction Railway in propelling trains?—No, except occasionally for a few yards at starting a train, when the rails are affected by frost or snow.

7. If so, is the extra engine applied in front of the train, or behind?—Behind.

8. Have the Directors been led by their experience to consider the use of an extra engine, either in front or behind, as an additional source of danger?—Not had any practical experience for reasons above stated. No accidents have ever happened on their line from these causes.

9. Are engines ever allowed to run tender foremost upon the Lancaster and Preston Junction Railway?—No, except one engine running one way with a luggage train. This belongs to Mr. Hargreaves, who is a carrier on this line.

S. Laing, Esq.
&c. &c.

S. EDWIN BOLDEN, Secretary.

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to Locomotive
Engines.

No. 10.

Lancaster and
Preston Junction.

No. 11.

MANCHESTER AND LEEDS RAILWAY.

Manchester, October 20, 1841.

No. 11.

Manchester and
Leeds.

1. The number of engines employed is 36.

2. Their construction may be thus generally described:—

Sixteen engines are coupled, having six wheels, viz., two pair of five feet diameter, and one pair, being the hinder or trailing wheels, three feet six inches in diameter. The wheels and axles are all of wrought iron, excepting the naves, and have both inside and outside bearings of the usual construction. The weight of these engines varies from 16 to 17 tons, and the weight on the front wheels is from six to seven tons.

Two engines are coupled, having each four wheels five feet in diameter. The wheels and axles are all of wrought iron, excepting the naves, and have inside bearings. The gross weight of each engine is 13½ tons, and the weight on the front wheels six tons.

The remaining 18 engines have each six wheels, and are not coupled. The front pair of wheels are three feet six in diameter, the centre or driving wheels are five feet six inches in diameter, and the trailing wheels three feet six in diameter.

The wheels and axles are all of wrought iron, excepting the naves, and have both inside and outside bearings of the usual construction. The weight of each engine is about 17 tons, the weight on the leading wheels being about 5 tons 10 cwt. to 6 tons.

3. The makers' names are as follows:—

Robert Stephenson and Co., Newcastle-on-Tyne.

Sharpe, Roberts, and Co., Manchester.

Nasmyth, Gaskell, and Co., Patricroft.

Shepherd and Todd, Leeds.

Edward Bury, Liverpool.

C. Taylure and Co., Vulcan Foundry, near Warrington.

Messrs. Rothwell and Co., Bolton.

Laird, Kitson, and Co., Leeds.

William Fairbairn, Manchester.

Haigh Foundry Company, Wigan.

4. The six-wheeled engine is preferred from its greater steadiness, and from its admitting of a heavier and more powerful engine being introduced than could have been accomplished upon four wheels.

5. The experience upon this line has not proved any of the Company's engines to be dangerous.

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Engines.No. 11.
Manchester and
Leeds.

6. Assistant engines are employed.

7. The general rule is to apply the assistant engine in front of the regular train engine. When the assistant is only required for a short distance to start the train into quick speed, or when if in front it would be difficult and dangerous to get it out of the way without stopping the train, the assistant is then employed behind the train.

8. As a rule, it is better to divide a long train than to run it with two engines, but there are many exceptions to this; for instance, in foggy weather, or where the trains would otherwise be too close upon each other, in both these cases the risk of collision is lessened by running long trains. On the other hand, as each wheel and axle may be said to bring with it its own liability to accident, any addition to the number of these in a train increases the possibility of accident, and from the greater value of a long train as compared with a short one, a failure in the former case will probably produce more mischief than in the latter.

The experience on this line has not proved the running of two engines in front of a train to be dangerous. The application of the assistant engine to the hinder part of the train is objectionable, and ought to be avoided when practicable; but a special train out of the usual time must always be attended with more danger than the use of two engines to one train.

9. No engine is allowed to run tender foremost with any train except in cases of emergency.

S. Laing, Esq.
&c. &c.

JOHN JELlicorse, Secretary.

No. 12.

No. 12.
Eastern Counties.

EASTERN COUNTIES RAILWAY.

SIR,

High Street, Shoreditch, London, October 21st, 1841.

In answer to your letter of the 11th instant, requesting information on various points relating to the locomotive power used on this railway, I beg to state that the Directors of this Company are at all times ready to afford to the Lords of the Committee of Privy Council for Trade the fullest possible information on all matters connected with the working of this line; and though the particulars required by their Lordships in the present instance involve some most intricate and difficult questions of scientific research, and are many of them matters of opinion and not of fact, the Directors have much pleasure in replying in the fullest manner in their power to the several questions you have proposed, it being their earnest desire, as well as most deeply their interest, to promote by every means in their power any plan which may conduce to the increased safety of railway travelling.

For the sake of perspicuity, the order you have adopted in your queries shall be followed in my present letter.

1st. The number of engines at present employed on this railway is 15 passenger engines and four ballast engines.

2nd. The whole of these engines have four wheels only; with the exception of one engine, to which an additional pair of rest or carrier wheels under the fire-box have been added for the purpose of experiment, but which experiment has not answered the expectations of the Directors. The following are the sizes of the wheels on the passenger engines, the particulars of the ballast engines being omitted as unnecessary for the purpose of the present inquiry, viz. :—

Number of Engine.	Driving Wheels.	Running Wheels.	Cylinders.	Remarks.
	ft. in.	ft. in.	Inches.	
4	6 0	4 6	12	With extra pair of carrier wheels 3 ft. 4 in. diameter.
1	6 0	4 6	12	
1	6 0	4 6	13	
1	6 0	4 3	13	
2	6 0	4 0	13	
1	5 6	4 3	13	
2	5 6	4 0	13	
1	5 0	3 0	12	
2	with coupled	wheels 5 feet	diameter, 14 in. cylinders.	

The weight of these engines (omitting the tenders and their load of water and coke) varies from about 9½ tons to 11 tons each. The proportional weight upon the driving wheels varies a little in the several engines, owing to differences in the shape of the fire-boxes, and other circumstances. But the general weight upon the driving wheels may be stated at about ⅓ of the total weight of the engine, and on the running wheels about ⅓. The axles are of the usual construction, and the bearings are all of the kind known as inside bearings. The axles are about six feet apart, which distance determines the extreme points of support in contact with the rails.

3rd. The makers of these several engines are Mr. Edward Bury, of Liverpool, Messrs. Braithwaite, Milner, and Co., of London, and Messrs. Jones, Turner, and Evans, of Newton.

4th. The question "What description of engines have the Directors been led by their experience to prefer, and for what reasons?" requires for its complete answer an extensive review of the various causes which come into operation in the working of locomotive engines. The question the Directors feel is of the utmost importance, and no subject has more anxiously engaged their attention, with the desire of arriving at sound practical conclusions. For this purpose it is necessary to consider the peculiar motions to which engines are subject. Inde-

pendent of the progressive motion along the rails there are three principal motions which take place during the transit of an engine.

1st. An oscillating or rocking motion transversely, caused by differences in the levels of the two rails.

2nd. An horizontal oscillation, transverse to the line of rails, produced by the flange of the wheels striking against the rails, in consequence of changes in the direction of the road, and by the cone of the wheels constantly correcting the effects of this action, and of that arising from small deviations in the gauge of the rails.

3rd. A vertical or pitching motion, produced by the preceding motions; by deflections of the rails; by the alternate sinking of any small portions of the road; and by inequalities at the joints of the rails.

These several motions affect engines with four wheels and with six wheels in different degrees. The first motion equally affects all engines, whether with four or with six wheels; supposing of course that such engines are properly constructed. The second is much greater with six than with four-wheeled engines. The third, in so far as it arises from inequalities in the rails, is more likely to operate on four-wheeled engines; but as this kind of motion is principally produced by the other two, and particularly by the second kind of motion, it will be greater in six-wheeled engines on curved lines, while on straight lines it will be greatest on four-wheeled engines. These several motions give rise to very complicated effects. The strain upon the axles of six-wheeled engines, the extreme points of support as compared with four-wheeled engines being in the proportion as 11 to 6, is directly as the distance between the extreme points in contact with the rails and the momentum of the moving body, and therefore experience has fully proved the far greater liability of six-wheeled engines to fracture their axles than is the case with four-wheeled engines. In fact, while with the former class of engines fractures of the axles are continually occurring, there is scarcely an instance on record of a broken axle to a four-wheeled engine, except in the case of the coupled wheels that are generally used with luggage trains: and even of these the fracture are extremely rare. The much greater weight of six-wheeled engines than those with four wheels is another objection to the use of the former class of engines, as they destroy the road and cause a greater vibration of the masonry than the lighter engines. These reasons induced the Directors to adopt their present form of engine; and they have found nothing to induce them in any degree to modify or change their opinion, confirmed as it has been, not merely by the working of this line of railway, but by the experience of various other lines, with the practical working of which they possess the most intimate knowledge, in consequence of many of their body being likewise Directors of several other Railway Companies.

5th. To the inquiry, "Have the Directors been led by their experience to consider any particular form of engine as particularly dangerous," the preceding observations will be in a great measure the reply. Neither of the two classes of engines in general use are dangerous when properly constructed, although the four-wheeled engines have the advantage in safety by being constructed with internal frames and bearings; but the peculiar advantages of each class will, as already stated, depend upon the prevailing characteristics of the road on which it is used.

6th. Extra engines are occasionally used on the Eastern Counties Railway in drawing the trains.

7th. These extra engines are always used in front of the train, and are never allowed to propel the train from behind, except in cases of accident or extreme emergency.

8th. The Directors consider the use of two engines to one train, when both are used in front of the carriages, to be the best mode of conveying large and heavy trains, and perfectly free from danger. They consider this mode preferable to the plan of dividing the train into two, each half being drawn by a separate engine; and they are of opinion that the mode of using assistant engines behind, though not necessarily dangerous, is not a desirable plan to be adopted when it can be avoided.

9th. Engines are not allowed to run with the tender foremost upon the Eastern Counties Railway. Circumstances, however, have occurred, and must occasionally occur, in which this otherwise invariable rule has been and may again be necessarily infringed.

The several points of your inquiry having thus been answered by the Directors in the best and fullest manner which they are able, they would beg in conclusion to offer a few remarks which they trust will not be deemed irrelevant to the subjects on which you have request their opinion. Deeply interested as they are in perfecting to the utmost extent the means of railway locomotion, the Directors would deprecate as the most fatal blow to future improvement any restrictions in the particular forms of engines, even though those restrictions should be in favour of that form of engine which they themselves consider to be the best. So great an amount of talent is now engaged in every department of the railway system, that improvements can scarcely fail to be introduced if this talent be left to its free exercise. As regards any restrictions in the forms of engines, they must necessarily be wholly nugatory. The correct position of the centre of gravity of an engine, and its proper balance upon the wheels are circumstances which affect its steadiness and safety far more than any distinctions in its external form. These important points are wholly beyond the possibility of any restrictive regulations. They depend upon the height and position of the wheels, the size of the cylinders, the height of the steam chamber, the depth of the fire-box, the position and even the strength of the springs; and, in short, upon such an extensive combination of circumstances, that the judgment of the manufacturer is the only rule by which they can be decided. And if we deduct from the various railway accidents which have occurred, those which have arisen from disobedience of orders, ignorance, and unavoidable misfortune, we shall find those that are attributable to imperfections of the locomotive engines so small in number as to leave but

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No. 12.

Eastern Counties.

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 Returns relating
 to Locomotive
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 No. 12.
 Eastern Counties.

very little improvement to be expected which can add to their safety, though in their practical efficiency and economical working great improvements may be effected, and appear even now on the eve of accomplishment.

S. Laing, Esq.,
 &c. &c.

I have, &c.

HENRY BOSANQUET, Chairman.

No. 13.
 Stockton and
 Darlington.

No. 13.

STOCKTON AND DARLINGTON RAILWAY.

1. Thirty-six locomotive engines are employed; viz. seven for the leading of coaches, and 29 for minerals and merchandize.

2. The engines employed for minerals and merchandize have six wheels four feet diameter, four and a half inch axles, with inside bearings.

Weight of the engines from 12 to 14 tons; equally divided upon the six wheels, said wheels being connected.

The coaching engines, four in number, with six wheels, weigh about 12 tons; unconnected driving wheels five feet diameter; the leading and hind-wheels three and a half feet.

Weight as follows: on leading wheels four tons, on driving wheels six tons, on hind-wheels two tons.

Two coaching engines, 11 tons and eight tons, with four wheels, each four and a half feet; connected; weight equally divided; one, four wheels; driving wheels five feet diameter; leading wheels three and a half. Weight as follows; driving wheels 6 tons; leading wheels four and a half tons.

The merchandize and coal engines have plain axles.

The coaching engines cranked axles.

3. The names of the makers as under:—

Sharp, Roberts, and Co., of Manchester;
 Kirtley and Co., of Warrington;
 John Hague, of London;
 R. Stephenson and Co., of Newcastle-on-Tyne;
 R. and W. Hawthorn, of Newcastle-on-Tyne;
 Timothy Hackworth, of Shildon;
 W. and A. Kitching, of Darlington;
 Fossick and Hackworth, of Stockton-on-Tees;
 Nesham and Welsh, of Stockton-on-Tees;
 William Lister, of Darlington.

4. For the minerals, the Directors have given the preference to six wheel engines; wheels four feet diameter, connected.

For coach trains six-wheels, as described in Answer No. 2.

In the former, on account of increased adhesion; and steadiness in running in the latter at high velocities.

5. No accident having occurred by any of our engines, we have no reason to consider them in any degree dangerous.

6, 7, and 8. Engines are not employed in propelling; but very rarely an additional one is employed in leading, by which we consider there is no risk.

Mineral trains at slow speed, limited to eight miles per hour, run with tenders of a heavy description foremost; but in coach trains invariably the tender follows the engine.

Signed by order,

Darlington,
 October 22, 1841.

SAMUEL BARNARD, Secretary.

No. 14.
 Glasgow and Ayr.

No. 14.

GLASGOW AND AYR RAILWAY.

SIR,

Railway Office, Glasgow, October 20, 1841.

I AM favoured with your communication of date the 11th instant; and beg to submit answers to the queries therein contained:—

1. Twenty engines are employed on this line of railway.

2. Eight of them are made on Mr. Edward Bury's plan, viz., four wheels, crank axle, and inside bearings, two of them are coupled engines, with five feet driving wheels; front axle four and a half inches diameter, with four-inch bearings, seven inches long. Weight on front wheels four and a half tons. Diameter of cylinder thirteen inches, with eighteen-inch stroke. The other six have five and a half feet driving wheels, four feet front wheels, axle of ditto four inch diameter, bearings four inches and seven inches long, weight on front wheels four tons. Four of them have twelve-inch cylinder, and two of them thirteen-inch, with eighteen-inch stroke.

The other twelve engines are constructed upon a plan of Mr. Miller's, this Company's engineer. They are six-wheeled, with outside horizontal cylinders, placed along side of smoke-box, and have also inside bearings. The driving-wheels are five and a half feet in diameter, wrought with crank pins on the outside, superseding the crank axle; diameter of cylinder thirteen inches, with eighteen-inch stroke; driving-axle six inches diameter; bearings five

inches, length of bearing seven inches; fore and aft-wheels three feet six inches diameter; axles five inches diameter; bearings four and three-quarter inches, length seven inches.

3. Makers' names:—

Two four-wheeled—Stark and Fulton, Glasgow.
Six four-wheeled—Edward Bury, Liverpool.
Four six-wheeled—Kinmond, Hutton, and Steel, Dundee.
Four six-wheeled—Stark and Fulton, Glasgow.
Four six-wheeled—Thomas Edington and Sons, Glasgow.
Twenty in all.

4. The description of engines the Directors have been inclined to give the preference to are the six-wheeled, although at the same time they have been very much satisfied with those upon Bury's plan.

5. The Directors do not consider either description of engines used upon this railway as dangerous, those on Bury's plan have been run upwards of two years, those on Miller's plan upwards of one year without the slightest accident.

6. Extra engines are sometimes employed, although very seldom, upon this railway in propelling carriages.

7. The extra engine is always applied in front of the train, not behind.

8. The Directors have not by their experience been led to consider an engine situated in front of the train dangerous, were it put behind, they are inclined to think that there would be risk of danger.

9. Engines are never allowed to run tender first upon this line. Upon the joint line, which is the portion between Glasgow and Paisley, and under the management of a committee appointed by this Railway Company and the Greenock Railway Company, and therefore not under the exclusive control of this Railway Company. Those engines which ran only between Glasgow and Paisley were run in one direction with the tender in front of the engine, there being no turning table at Paisley. A table is now being put in, and this evil will be done away with in the course of a few days.

Trusting the above information will suit the purpose intended,

I am, &c.

S. Laing, Esq.,
&c. &c.

W. JOHNSTONE.

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Returns relating
to Locomotive
Engines.

No. 14.

Glasgow and Ayr.

No. 15.

MANCHESTER AND BIRMINGHAM RAILWAY.

SIR,

Engineer's Office, Manchester, October 16, 1841.

THE official answers to the questions proposed by the Lords Committee of Privy Council for Trade will be given by the Board of Directors of the Manchester and Birmingham Railway at their next meeting on Thursday the 21st of this month.

A portion of those answers will be founded upon my report to them on the comparative merits of four-wheeled and six-wheeled engines, a subject to which I have long given much consideration, and in reference to which I am glad to find that the Board of Trade is making inquiry.

I have long been convinced of the superior safety of six-wheeled engines, and I have embodied in my report the result of my investigation of this subject.

The public, the railway companies, and myself also, (especially as engineer-in-chief to the Manchester and Birmingham Railway,) are deeply interested in this subject, and therefore I trust no apology is necessary for my having volunteered to supply a copy of the report which I send herewith, begging the favour that it may be submitted to the Board of Trade.

I have, &c.

S. Laing, Esq.,
&c. &c.

GEO. W. BUCK.

No. 15.
Manchester and
Birmingham.

(Copy.)

To the Board of Directors of the Manchester and Birmingham Railway.

GENTLEMEN,

Manchester, October 14, 1841.

IN the following observations I shall endeavour to explain my reasons for having recommended locomotive engines with six wheels in preference to those with four.

The main reason, or, indeed it may be said, almost the only one, is their superior safety, and I hope to be able clearly to show how this superiority arises.

First. The engines with six wheels are of much greater length, hence it is evident that in passing over an inequality in the level of the rails, the angle of ascent and descent will be diminished inversely as the distance between the fore and hind axles; and because this distance in the ordinary four-wheeled engines is from five feet nine inches to six feet, and between those of the best six-wheeled engines is twelve feet, this angle will consequently be diminished one half. Thus we see that in passing over an inequality, both engines running at the same velocity, that which is only half the length of the other will pass over it in half the time, the angle of ascent and descent being double; hence the shock is four times greater in the short engine than in the long one.

Again. If the four-wheeled engine be of equal power with the six-wheeled engine, and of proportionate strength, its weight will be such that there must be a greater load upon a

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Manchester and
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single pair of wheels than in the six-wheeled engine, and consequently a greater deflexion of the rails and depression of the road.

The preceding has reference to the longitudinal pitching or plunging motion of the machine. I shall now explain how the lateral oscillation, or rocking is affected by the difference in length.

Second. A four-wheeled engine, like a four-legged stool, if placed upon a surface which is not a perfect plane, (as upon rails not in good order,) will be supported by two points only, namely, by one fore and one hind wheel, in the direction of the diagonal, leaving it at liberty to rock sideways; and supposing the distance between the axles to be six feet, the rails being laid at the ordinary gauge, it will rock upon the diagonal of seven feet and three quarters long. But the amount of inequality which occurs in the rails in the distance between the fore and hind axles of a four-wheeled engine, has, in the case of the six-wheeled engine, to be traversed by another succeeding pair of wheels, fixed in the same frame; the rocking is thus restrained and almost entirely prevented, the strain being transferred from the first diagonal to the second.

Third. In the four-wheeled engines there is necessarily a much greater weight upon the hinder than upon the fore wheels, and the entire weight of the fire-box overhangs the hinder axle, having a tendency to lift the fore wheels off the rails. In the six-wheeled engine also the fire-box overhangs the hind axle, but the greatest weight is thrown upon the middle wheels, and in it the weight of the fire-box cannot have any dangerous tendency.

Fourth. The thrust and pull of the connecting rods have a tendency, in every part of a revolution, except at the moment when they are in a horizontal position, to lift the fore wheels off the rails, and they act with variable intensity on each side of the machine alternately, tending to produce a rocking motion.

Fifth. The driving-wheels of the four-wheeled engine are necessarily behind, and there results the same objection to this mode of applying the motive power to the machine itself as there is to putting the engine behind a train to propel it.

Engines with four wheels when running at high velocities, are subject to a violent horizontal action, tending to beat the rails outwards, and communicating a similar motion to the tender and train behind. This is produced by the following causes, namely,

The driving-wheels (in both classes of engines) do not, and cannot act, at each instant with equal intensity to propel the machine forwards, and this inequality of effort of the wheel upon the rails arises and is produced as follows. First. The cranks of the two cylinders pass their respective centres at different times, so that when one connecting rod is reversing its motion, the other is exerting its maximum effort, this, together with the small amount of torsion in the crank axle, and play of the joints and bearings, causes one to cease to act for a moment.

Again, the tires of the wheels being frustra of cones, the lateral movement of the engine between the rails, causes first one wheel and then the other to be alternately running upon a larger circumference of its tire than its fellow; when thus acting, the vertical radius of one driving-wheel is shorter than that of the other, and consequently the intensity of its action is greater. In six-wheeled engines the driving-wheels are in the centre of their length, hence their horizontal vibration is restrained by the leading and following wheels.

Sixth. It is alleged by some that four-wheeled engines pass through curves easier than six-wheeled engines do, and are less liable in such places to mount the rails. Now as this seems very plausible and theoretically correct, it appears to have been generally admitted as indisputable; but on a close examination of all the circumstances of the case as they actually occur in practice, the contrary will be found to be true; at least it will be so in reference to all curves of such radii as are admissible in railways.

To be convinced of this it will be necessary to refer to a mathematical investigation which I have given as an Appendix to this Report, by which it is found that, with the usual allowance for play between the flanges of the wheels and the rails, an engine whose extreme axles are twelve feet asunder, and another whose axles are six feet asunder, will pass through a curve of 576 feet radius with equal resistance, or with equal facility; and it also appears from the same investigation, that upon all curves of a larger radius, the longer engine has the advantage.

Now there is not a passenger-railway in the kingdom, I believe, upon which a curve is to be found on the main line, with a radius so short as this. For these reasons all the crossings and sidings upon your railway are laid with a radius of 600 feet.

Seventh. If an axle of a four-wheeled engine break, the machine must fall; but, on the contrary, if an axle of a six-wheeled engine break, it will not fall; and to ensure additional safety, the middle or driving-wheels of a six-wheeled engine should not be without flanges, in order that in the event of one of the other axles breaking, the engine may not leave the rails. This precaution has been found of immense importance on a railway which has been singularly free from casualties.

The truth of the preceding remarks receives confirmation by reference to the accounts of all those accidents which have arisen from engines going off the rails, inasmuch as it will be seen that in almost every instance they have occurred with four-wheeled engines.

The preceding defects of the four-wheeled engines are inseparable from their construction, and result entirely from their being limited to that number of wheels; but the following, which I am about to point out, are only the consequence of the customary mode of construction, and might be avoided.

First. Supposing the diameter of the driving wheels to be the same in both kinds of engines,

the centre of gravity of that with four wheels is at a greater height above the rails than of that with six wheels; and for the following reasons, namely, most of the four-wheeled engines are constructed without an outside framing, the crank axle is consequently much shortened, and there being less space for the gearing, the four eccentrics are fixed close to the centre of the crank axle, immediately under the boiler, rendering it necessary to fix the boiler higher, in order to admit of their being placed in that position. This greater altitude of the centre of gravity increases their liability to lateral vibration or rocking. But there is also another reason why the centre of gravity of the six-wheeled engine is nearer to the rails than that of the four-wheeled engine; and this reason ought to have been mentioned in the first series of observations. It is this: the engines with six wheels are heavier than those with four, and the difference of their weight resides in the longer framing and in the additional pair of wheels; hence it is obvious that their centre of gravity must be nearer to the rails, and that their stability must be much increased thereby.

Second. In most engines (both four-wheeled and six-wheeled) there is no compensation for the weight of the cranks and connecting rods: their collective weight is very considerable; hence the common centre of gravity of the driving-wheels and cranks does not coincide with the axis of motion, and consequently does not move parallel to the rails, but in an epicycloidal line. This incurs a waste of power, which is expended upwards and downwards upon the rails, and produces much unsteadiness in fast running.

This evil is much less in engines with six wheels than in those with four; but it may be obviated in both by a counterbalance weight, which is applied to all of your engines but two.

General Observations.

On the score of economy, I have briefly to observe that six-wheeled engines are more costly to make; but I consider them not more expensive to keep in repair.

It has been said that their additional weight involves a greater expenditure of coke; but I have found the value of this not to exceed 9d. in a trip from Manchester to Birmingham with an average passenger train. On the other hand, in consequence of their greater steadiness of motion, they are much less destructive to the rails, and the road is kept in repair at less expense.

Most of the arguments in favour of the engines having six wheels are applicable to the tenders. I have accordingly recommended such for your concern to be made, with their framing similar to those of the engines. They will thus be capable of sustaining the momentum of the train from behind without being thrown off the rails.

When accidents have occurred with *six-wheeled engines* having *four-wheeled tenders*, the latter have been generally upset and have caused more mischief than anything else.

Here it is worthy of remark, that in the late accident on the London and Brighton Railway, although the six-wheeled engine was *only forced off* the rails, its four-wheeled tender was *upset*.

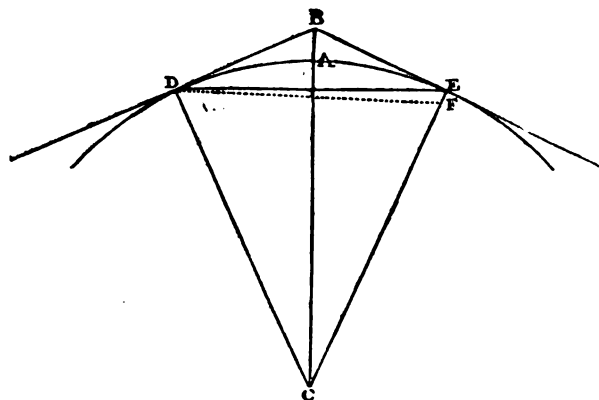
Each of the first six specified defects of the four-wheeled engines has a tendency to throw the engine off the rails; not one of them singly would be of any importance at a *low velocity*; each, however, becomes serious at a *high one*, and all may come into operation at the same instant, when the engine will certainly leave the rails; whereas I have not known an instance of a six-wheeled engine going off the rails in consequence of merely running at a high speed.

I am, &c.

GEORGE W. BUCK, Civil Engineer.

APPENDIX.

Investigation to determine the Angle which the flanges of the wheels of a Locomotive Engine make with the Rails when laid in a Curve.



Let D A E be the rail laid in a curve whose radius is C D, and let D E be the distance between the fore and hind axles of the engine, the points D and E representing the position of the wheels when both are in contact with the same rail. Also, let E F be the distance from the flange of the hind wheel to the rail when the other hind wheel is in contact with the opposite rail. This distance, E F, is that called the play between the rails, and let D B be a tangent to the curve at D, meeting C B, which is a line bisecting the angle D C E.

Put D E = l , C D = r , and E F = a

Then $\frac{l}{2r} = \sin A C D$, or E D B

and $\frac{a}{l} = \sin E D F$.

The angle F D B is that which the flange of the wheel makes with the tangent D B when the engine is vibrating between the rails; and because the angles E D B and E D F are very

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small, the sum of their sines may be taken as the sine of the angle $F D B$; we then have $\frac{l}{2r} + \frac{a}{l} = \sin F D B$. Now, to compare the angle made with the tangent of the curve by engines of different lengths, call the length of the other engine l' , then the sine of its corresponding angle, $F D B$, will be $\frac{l'}{2r} + \frac{a}{l'}$; and putting these equal, we have

$$\frac{l}{2r} + \frac{a}{l} = \frac{l'}{2r} + \frac{a}{l'}; \text{ whence } r = \frac{ll'}{2a}.$$

Now the usual allowance for play is three quarters of an inch; therefore, inserting this value of a , and calling $l = 6$ feet and $l' = 12$, we find $r = 576$ feet. Thus upon a curve having a radius of 576 feet, and with a play of three quarters of an inch, the flanges of the fore and hind wheels of engines whose axles are distant from each other 6 feet, and 12 feet respectively, will make equal angles with the tangent of the curve; each having, in this respect, an equal tendency to mount the rail.

It is further well worth observing from the original equation, that the sine of the angle $E D F$ increases directly as the play (a); it is therefore desirable that this should be as small as practicable, and that it is a mistake to suppose, as some have done, that engines will go round any curve to be found upon modern railways with greater facility or safety by giving more play between the flanges of the wheels and the rails. It is also evident that the sine of the angle $E D B$ diminishes inversely as the radius; and therefore, collectively, the greater the radius and the smaller the play the better. The latter is only limited by the accuracy with which the wheels are fixed upon the axles, and with which the rails are laid; and is an argument in favour of laying the rails upon transverse sleepers instead of upon insulated blocks.

GEORGE W. BUCK.

ANSWERS to Questions put by the Board of Trade.

Manchester, October 21, 1841.

1. What number of engines are employed upon the Manchester and Birmingham Railway?—The present stock of engines is six; the railway being only open for passenger traffic from Manchester to Stockport, a distance of five miles and a quarter.

2. What is the construction of such engines, specifying the number of wheels, and their diameter, the weight of the engine, the weight on the front wheels, the construction of the axles and bearings, and any other particulars bearing upon the question of safety?—All the engines have six wheels, the middle pair, or driving-wheels, are five feet and a half diameter; the fore and hind wheels are three feet and a half diameter. The weight of the engines, including fuel and water, not exceeding fifteen tons, of which seven tons are on the driving-wheels, and four tons on each of the fore and hind wheels. The distance from the foremost axle to the crank axle is six feet, and from the latter to the hind axle five feet: the total distance from the centre of the fore axle to the centre of the hind one being eleven feet; in those now making it will be twelve feet. The axles have outside bearings, which are five inches and a half long and three inches and a half diameter. The crank axle has two inside bearings six inches diameter, and are made of the best selected scrap iron, six inches and a half diameter in the nave of the driving-wheels, and six inches diameter in the journal of the connecting rod. The cylinders are fourteen inches diameter with a stroke of eighteen inches. In answer to the latter part of the question, viz., "any other particulars bearing upon the question of safety," it is considered that the outside frame contributes much to that end, inasmuch as the frames of the engines and tenders are similar, and consequently in a line with the buffers, and are thus calculated to sustain a shock without injury. Also the weight of the cranks and connecting rods is compensated for by a counter weight on each driving-wheel.

The driving-wheels of some of the engines have flanges, and some are without them, but the former are considered to add to their safety in the event of an axle breaking, and are ordered in the engines now making for the Company. Some of the tenders in use have six wheels and some four; the former are preferred, believing them to be much less liable to be thrown off the line or upset, and those now making for the Company will have six wheels.

3. What are the names of the makers of such engines?—Messrs. Robert Stephenson and Co., and Messrs. Sharp, Roberts, and Co.

4. What description of engines have the Directors been led by their experience to prefer, and for what reasons?—Engines with six wheels, such as are described in the answer to question 2, and for the reasons therein stated.

5. Have the Directors been led by their experience to consider any particular description of engine as peculiarly dangerous, and if so, for what reasons?—The Company have had no experience of any other form of engine than those with six wheels.

6. Are extra engines ever employed upon the Manchester and Birmingham Railway in propelling trains?—No engines have been used in propelling trains, that is, by being placed behind them.

7. If so, is the extra engine applied in front of the train, or behind?—A second engine has never hitherto been required to a train.

8. Have the Directors been led by their experience to consider the use of an extra engine either in front or behind as an additional source of danger?—The Company are without any knowledge derived from experience in this respect.

9. Are engines ever allowed to run tender foremost upon the Manchester and Birmingham Railway?—The traffic between Manchester and Stockport is worked with the tender behind

the engine, when running to Stockport, which is ascending; but before the engine when descending from Stockport to Manchester. The hinder end of the tender is provided with iron guards similar to those attached to the front of the engine for the purpose of throwing aside anything which might be accidentally left upon the rails when the tender precedes the engine. This mode of working is but temporary, but it has been in use ever since the partial opening of the railway in June of last year, and without the occurrence of the slightest casualty.

E. J. CLEATHER, General Superintendent.

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Engines.

No. 15.

Manchester and
Birmingham.

No. 16.

CHESTER AND BIRKENHEAD RAILWAY.

No. 16.

Chester and
Birkenhead.

SIR,

Liverpool, October 21, 1841.

To the questions proposed in your circular of the 11th October, I am desired by the Directors of this Railway to make the following replies:—

To query No. 1. We have six locomotive engines, viz., three in daily work and three duplicates.

2. They are all six-wheeled engines.

					Ft.	In.
Diameter of driving wheels	.	.	.	.	5	6
Diameter of leading wheels	.	.	.	.	3	6
Diameter of following wheels	.	.	.	.	3	6

Gross weight, with fuel and water ready for work, about 15 tons.

Weight on the front wheels?

Having no weighing machine on our line, this question cannot be correctly answered, but suppose about three tons and half; but the distribution of the weight of a six-wheeled carriage cannot be preserved for any length of time on account of the variation of the elasticity of the springs.

The axles are the double crank kind, such as in general use on most railways, with outside bearings. Two engines have wheels altogether of wrought iron, except the nave, which is of cast iron. The wheels of the other four engines are a combination of cast iron, wrought iron, and wood, put endways beneath the tire (known by engine-builders as R. Stephenson's wheel). Indeed our engines are duplicates of many now running on the Liverpool and Manchester and Grand Junction Railways.

N.B. Two of our engines have no flange to the middle or driving wheels.

3. Four engines made by Charles Tayleur and Co.

Two " " Mather Dixon and Co.

4 and 5. Having only tried one description of engine, the Directors cannot enter into the merits of engines differently constructed. They were guided by the advice of their own engineers, Mr. George Stephenson and Mr. John Dixon, both of whom have had great experience and been instrumental in bringing the locomotive engine to its present state of perfection; and the entire absence of accident on the Chester and Birkenhead line hitherto, induces the Directors to be satisfied with the principle of the engines they have got.

Mr. Stephenson and Mr. Dixon strenuously advocate the use of six wheels, on the grounds of safety in case of a broken axle, &c. The six wheels were introduced on the Liverpool and Manchester line by Mr. Dixon, whilst he was their chief engineer, and for some years they have used no other kind.

6. Extra engines are occasionally employed in propelling trains.

7. They are generally applied in front of the train, but when a train has been unable, through inefficiency of one engine or an overload to proceed, they have occasionally been assisted by an engine behind.

8. The Company's engineer at present in charge of the line, viz., Mr. Dixon, states that he considers there is no additional source of danger incurred by using an extra engine in front of a train, but cannot do otherwise than consider it dangerous to employ the extra engine to propel the train, instead of drawing it, and only suffers it to be done on occasions of emergency, when the position should be changed at the first station or siding they come to.

9. Engines are never allowed to run tender foremost with trains, it being considered exceedingly dangerous.

I am, &c.

J. MALLABY, Clerk of the Company.

S. Laing, Esq.
&c. &c.

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No. 17.

BIRMINGHAM AND GLOUCESTER RAILWAY.

October 22, 1841.

No. 17. 1. Thirty, viz., 26 train engines and 4 ballast engines.
Birmingham and Gloucester. 2 and 3,—

Number of Engines.	Makers.	Number of Wheels.	Diameter of Driving Wheels.	Diameter of Bearing Wheels.	Weight of Engine with Coke and Water in.	Weight on Front Wheels with Coke and Water in.	Driving Axles.	Framing Inside or Outside the Wheels.	Cylinders.	Fire-Boxes.	
			ft. in.	ft. in.	Tons.	Tons.					
4	G. Forrester, Liverpool . .	6	5 6	$\left. \begin{smallmatrix} 3 & 6 \\ \text{and} \\ 3 & 0 \end{smallmatrix} \right\}$	13	4	Strait	Outside	Outside	Square	<div>The driving wheels are near the centre of the engine, and a pair of bearing wheels at each end.</div> <div>The driving-wheels of these engines are near the fire-box, and the other 4 carry a bogie trane, to the centre of which the smoke-box is attached by a centre-pin, the engine framing on both sides of the smoke-box resting on studs acting on the bogie springs. In the column "Weight on front Wheels," the weight given for these engines is the total weight on the 4 wheels.</div>
3	William Norris, Philadelphia, North America.	6	4 0	2 6	12	4	,,	Inside	,,	Circular	
3	Ditto	6	4 0	2 6	10½	3½	,,	,,	,,	,,	
7	Ditto	6	4 0	2 6	10	3½	,,	,,	,,	,,	
3	B. Hick and Son, Bolton .	6	4 0	2 6	10½	4½	,,	,,	,,	,,	
5	Nasmyth and Co., Patricroft, near Manchester.	6	4 0	2 6	11½	4½	,,	,,	,,	,,	
1	Ditto	6	5 0	2 9	12	4½	,,	,,	,,	,,	

4. Not yet able to answer this question.
5. Have not had experience to decide this question.
6. Extra engines are frequently employed in drawing trains on this railway.
7. The extra engine is always placed in front when practicable, but at other times behind.
8. Experience on this railway has not shown that an extra engine is an additional source of danger.
9. Not with trains.

GEORGE KING, Secretary.

No. 18.
London and
Croydon.

No. 18.

LONDON AND CROYDON RAILWAY.

QUESTIONS.

ANSWERS.

1. What number of engines are employed upon the London and Croydon Railway?
2. What is the construction of such engines, specifying the number of wheels and their diameter, the weight of the engine, the weight on the front wheels, the construction of the axles and bearings, and any other particulars bearing upon the question of safety?
3. What are the names of the makers of such engines?
4. What description of engines have the Directors been led by their experience to prefer, and for what reasons?
5. Have the Directors been led by their experience to consider any particular description of engine as peculiarly dangerous, and if so, for what reasons?
6. Are extra engines ever employed upon the London and Croydon Railway in propelling trains?
7. If so, is the extra engine applied in front of the train, or behind?
8. Have the Directors been led by their experience to consider the use of an extra

1. Eight.
2. The answer to this question is supplied in the tabular form (A) annexed.
3. This question is also answered in the annexed table.
4. Mr. Gibbs, the engineer, under whom the Croydon Railway was constructed, has in a letter, a copy of which (B) is subjoined, stated the reasons which, under his advice, determined the Directors originally to use six-wheeled engines, and they have since had no reason to alter that decision.
5. The experience of the working of the Croydon Railway would lead to the belief that the six-wheeled engine is safe in itself, but it can, of course, afford no inference respecting any other form of engine.
- 6, 7, and 8. An extra engine is employed to assist heavy trains up the inclined plane (of 1 in 100 gradient) between New Cross and Forest Hill. This assistance was for a long time invariably given behind the train, and without the least accident or inconvenience. On such a steep incline, and with the contin-

engine, either in front or behind, as an additional source of danger ?

gent danger of collision which might arise from the assistant engine being used in front, requiring that it should leave the down train and cross the main line exactly at the time that the return train is due, it was conceived on the whole that assistance behind or in front was nearly equally safe. To satisfy the prejudices of the public, assistance is now, for the most part, given by an engine a-head of the train, and as soon as some requisite arrangements are made at the Forest Hill station (to remove the contingent risk previously referred to), the assistance will always be given in front.

The Directors have felt it expedient maturely to consider these questions, and an experiment has been made for the purpose of demonstration, which is detailed in the report of the Company's resident engineer, dated the 24th November, 1840, and the experience on other lines, recorded in his letter, dated 8th December, 1840, copies of both which (C and D) are subjoined.

It is not conceived that any danger is likely to arise from the assistance of an engine in front.

9. Are engines ever allowed to run tender foremost upon the London and Croydon Railway ?

9. The engines of passenger-trains now run always in front of the tender.

R. YOUNG, Secretary.

Appendix.
VI.
Returns relating to Locomotive Engines.
No. 18.
London and Croydon.

(A.)

No.	Name of Engine.	Name of Maker.	Weight of Engine in Work.	Weight on Front Wheels.	Weight of Tender in Work.	Distance between centre of Front and Driving Wheels.	Distance between centre of Hind and Driving Wheels.	Diameter of Front Wheels.	Diameter of Driving Wheels.	Diameter of Hind Wheels.	Thickness of Front and Hind Axles.	Thickness of Cranked Axles.	Length of Bearings.	Thickness of Bearings.
			Tns. Cwt.	Tns. Cwt.	Tns. Cwt.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Inches.	Inches.	Inches.	Inches.
1	Surrey . .	Sharp and Roberts	13 14	5 11	8 8	6 0	5 0	3 6	5 6	3 6	4	6½	5½	3½
2	Croydon . .	G. and J. Rennie.	13 5	4 14	8 5	5 4½	5 1½	3 6	5 6	3 6	4	5½	4½	3½
3	Sussex . .	Sharp and Roberts	14 2	6 12	8 15	6 0	5 0	3 6	5 6	3 6	4	6½	5½	3½
4	Kent . .	Ditto	13 10	5 1½	8 1	6 0	5 4	3 6	5 6	3 6	4	6½	5½	3½
5	London . .	Ditto	13 13	4 7	9 1	6 0	5 4	3 6	5 6	3 6	4	6½	5½	3½
6	Archimedes .	G. and J. Rennie .	14 9	4 16	8 6	5 4½	5 1½	3 6	5 6	3 6	4	5½	4½	3½
7	Hercules . .	Sharp and Roberts	15 15	6 1	9 13	5 8	5 2	5 6*	5 6*	3 6	4½	6½	5½	3½
8	Sydenham .	Ditto	14 6	5 7½	8 17	6 0	5 4	3 6	5 6	3 6	4	6½	5½	3½

* Coupled.

The diameter of the cylinders of all the engines is 13 inches, excepting the "Hercules," which is 14 inches; the stroke in all is 18 inches long. The "Hercules" is principally used for goods and ballast. The axles of all the engines are provided with outside bearings, on which the frame is supported by the springs, the cranked axles being steadied by inside bearings, which carry no weight, but correct any tendency to lateral strain. All the six wheels in each engine have flanges about one inch and a quarter deep, excepting the "Hercules," which has no flanges on the driving wheels.

(B.)

DEAR SIR,

14th October, 1841.

I HAVE your letter of yesterday, requesting me shortly to state the reasons which guided me in deciding on the employment of engines on the Croydon Railway resting on six wheels, in preference to those having only four, to enable you to answer certain questions asked from the Croydon Railway Company by the Government. I always had an objection against the use of four-wheeled engines, more especially on newly-constructed railways, on account of their great liability to oversetting, and recent events have proved that my opinion in this case was correct; but as there must still be advocates for their use, I think it is proper I should state the ground of my objection to four-wheeled engines and consequent preference to the use of those having six. On railways having steep gradients, say 1 in 220, an engine being loaded up to its power, must lose the average speed in ascending the summits. To keep time throughout the journey, a high degree of velocity must be attained in descending, which is often, on a new road, carried to the limit of safety. Now it is clear that if the engine-man shuts off, or even diminishes his supply of steam, the engine, from its greater friction, will diminish its speed much earlier than the train, consequently the train will become for a short time the propeller of the engine. Now imagine the engine having the largest driving wheels and boiler the case

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No. 18.
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will admit of (and which is necessary for the gradients on such a line as I have alluded to), and that a large portion of the weight of the engine is placed on the driving wheels; also suppose the road to be new, and consequently undulating even very slightly; again suppose the limit of velocity attained in descending to make up the loss of speed in ascending the summit; you will now perceive a probable position; if the engineman suddenly shuts off or even diminishes his steam for the previous oscillation to be increased until the engine tumbles over, not sideways, but in a line diagonal to its length. It is absurd to suppose there is danger in two engines being attached; the danger arises from the engine being supported on points too near together, and having too much overhanging weight on one side of the driving wheels, which is needful to obtain the necessary traction. I never had the same objection to low four-wheeled engines, where the wheels are coupled and of one dimension, nor did I ever apprehend danger from the small engines on four wheels, such as are used on the Greenwich Railway; but if you make a section through one of them, weighing, without water, say four tons, and one of the larger recently constructed engines, say of ten or twelve tons, and then find the centre of gravity, you will soon perceive the greater danger of the four-wheeled engine. It may be said that the six-wheel engine will present the same cross section; but, as I before stated, the oversetting of an engine under the circumstances I have before named, is not sideways, but angularly somewhere in a line taken from corner to corner. Now, if you make a cross section in this direction, and find the centre of gravity, you at once perceive the greater danger of oversetting of the four-wheeled engine as compared with that of six wheels. I do not mean to pronounce four-wheeled engines as unfit for use, nor do I mean to say that of themselves they are liable to upset; but I wish to be understood as saying that on a new road, and descending a steep plane and shutting suddenly off the steam, though of themselves not separately dangerous, yet all of them combined together may become so. These were the considerations which influenced me in deciding on the use of six-wheeled engines on the Croydon Railway.

C. H. Gregory, Esq.

I am, &c.

JOSEPH GIBBS.

(C.)

To the Directors of the London and Croydon Railway.

GENTLEMEN,

24th November, 1840.

ACCORDING to your instructions, I have this day tried an experiment in the presence of the chairman, deputy chairman, and Mr. Baines, for the purpose of determining practically the effect of the assistant engine on the inclined plane at New Cross, and the actual amount of danger to be anticipated from the sustained pressure of the assistant engine in the case of any sudden stoppage of the train before it. With this view, a train was made of five loaded coal-waggons of a gross weight of $30\frac{1}{4}$ tons, which is about equal to an ordinary passenger train. The "Croydon" engine was placed at the head of this train, with the "Hercules" engine assisting at the rear, and drew it up the inclined plane. On the train acquiring a velocity of $22\frac{1}{2}$ miles per hour, the steam of the leading engine was suddenly shut off. The effect was instantaneously felt in the assistant engine, on which the whole weight of the train seemed thrown back, causing a strong re-action, which reduced the velocity of the train to 15 miles per hour, the steam being still acting with full force in the assistant engine. The order was then given to stop the assistant engine, the steam was shut off, and the brake screwed down, when the engine instantly separated from the train, and stopped in less than its own length. The same train was then taken up by the leading engine alone, and on attaining the same speed of $22\frac{1}{2}$ miles per hour, the steam was shut off. The velocity of the train was reduced for the first furlong from $22\frac{1}{2}$ to 12 or 15 miles per hour, being nearly the same as in the previous case, when the assistant engine was acting behind. The engine and train stopped in a distance of $7\text{-}32\text{nds}$ of a mile, without the use of the brake. The practical inference from this experiment is valuable, as showing that there is a great deal of unnecessary alarm existing as to the supposed danger of the assistant engine on the inclined plane. First, any stoppage of the train is instantly felt on the assistant engine, which may be stopped before any serious result can arise from its overrunning the train. Secondly, the effect of any sudden stoppage of the train is to cause such a sudden re-action on the assistant engine, that for the first furlong afterwards it appears to communicate scarcely any impulse to the train, the velocity of the train after the steam is shut off in the leading engine being nearly the same with or without the action of the assistant engine. Thirdly, the retarding effect of the inclined plane is so great that the least obstruction would be sufficient to stop the train in a very short distance, even when the assistant engine is acting with full force.

I am, &c.

CHARLES HUTTON GREGORY, Resident Engineer.

(D.)

To the Directors of the London and Croydon Railway.

GENTLEMEN,

8th December, 1840.

ACCORDING to your instructions, I have written to the Liverpool and Manchester, the Grand Junction, and the London and Birmingham Railways, to ascertain whether the practice of assisting trains up inclined planes by an engine at the rear exists on those lines, and whether it has ever been found to be attended with danger, or inconvenience.

I learn that on the Liverpool and Manchester Railway the system is in daily use, and that it has never been found to be attended with dangerous consequences; on the contrary, it is con-

sidered safer with a long train to assist up an inclined plane by an engine behind the train rather than in front.

On the Grand Junction Railway, the assistant engine is behind in assisting up short and steep inclines; but elsewhere the assistant engine, if required for heavy or late trains, takes the lead. Hitherto neither inconvenience nor danger has resulted from the practice, which is prohibited except on inclined planes.

On the London and Birmingham Railway, pushing a train on the line is only allowed in cases where the power cannot be applied in any other way.

I am, &c.

CHARLES HUTTON GREGORY, Resident Engineer.

Appendix.

VI.
Returns relating
to Locomotive
Engines.

No. 18.
London and
Croydon.

No. 19.

BOLTON AND LEIGH RAILWAY.

No. 19.
Bolton and Leigh.

SIR,

Bolton, October 25, 1841.

IN reply to your circular of the 11th instant, I beg to make the following return:—

1st. Mr. Hargreaves, the lessee of the Bolton and Leigh Railway, has 13 locomotive engines; but he finds his own power for the conveyance of merchandize, &c. on the Liverpool and Manchester, North Union and Lancaster, and Preston Railways, and the greater number of his engines are employed upon those lines.

2 and 3. The names of the makers, and construction of his engines, are as follows, viz.:—

Engines.	Makers.	Number of Wheels.	Diameter of Large Wheels.	Diameter of Small Wheels.	Weight of Engine.	Front Weight on Wheels.	Strength of Journal.		
							Inside Bearings.	Outside Bearings.	
			Ft. In.	Ft. In.	Tns. Cwt.	Tns. Cwt.	Inches.	Inches.	
Utilis	Mr. Hargreaves	8	4 8	2 9	15 5	6 0	5	..	Straight axle, coupled.
Victoria	Ditto	6	4 8	2 9	14 10	6 0	5	..	Ditto.
Castle	Ditto	6	4 8	3 0	14 15	5 15	6	..	Ditto.
Marquis of Douro	Messrs. C. Tayleur and Co.	6	4 8	3 0	15 10	5 12	..	4½	Crank axle, coupled.
Pandora	Ditto	6	4 8	3 0	15 10	5 12	..	4½	Ditto.
Wellington . . .	Ditto	6	4 8	3 0	14 0	5 0	..	4½	Ditto.
Soho	Messrs. B. Hick and Son	6	4 8	2 9	14 10	5 0	5½	..	Ditto.
Peel*	Mr. Edward Bury	6	4 8	3 0	12 0	4 10	..	4	Crank axle, uncoupled.
Clarence* . . .	Ditto	6	5 0	2 9	12 0	4 10	4½	..	Crank axle, coupled.
Nelson*	Messrs. R. Stephenson and Co.	6	4 8	3 0	12 5	4 10	..	4	Crank axle, uncoupled.
St. David . . .	Messrs. Bourne, Bartley, and Co.	6	5 0	3 0	10 15	4 5	..	4	Ditto.
Veteran* . . .	Mr. William Dean	6	5 0	2 9	12 0	4 10	5	..	Crank axle, coupled.
Liverpool . . .	Ditto	4	4 6	..	11 0	4 15	4½	..	Ditto.

NOTE.—The engines marked thus * have been altered from four to six wheels.

4. From practical experience of various descriptions of locomotive engines, Mr. Hargreaves prefers a six-wheeled engine with straight axles and outside cylinders, there being much less liability of an axle of this description breaking than a crank axle; this kind of engine is also kept in repair at less cost than engines with cranked axles, the working parts being got at with greater facility, and any slight derangement of the working parts being much sooner detected.

5. Mr. Hargreaves has not found any particular description of engine peculiarly dangerous.

6 and 7. The practice of attaching extra engines to the passenger-trains is seldom resorted to, the trains not being so heavy as to require it; but when an extra engine is required, it is attached indiscriminately to the front or back of the train, as may be found most convenient at the time.

8. As no accident has ever happened in propelling trains on the Bolton and Leigh Railway, Mr. Hargreaves has not found the system objectionable in practice.

9. Engines are allowed to run tender foremost on this railway.

I am, &c.

HENRY BRADSHAW,

Principal Clerk to John Hargreaves, jun., Esq. the Lessee of the said Railway.

S. Laing, Esq.,
&c. &c.

No. 20.

LIVERPOOL AND MANCHESTER RAILWAY.

No. 20.
Liverpool and
Manchester.

SIR,

Lime Street Station, Liverpool, October 26, 1841.

WE are instructed by the Directors to transmit you replies to the several queries contained in your communication of the 11th instant.

1. The number of locomotive engines employed on the Liverpool and Manchester Railway is 34.

2. The engines are all supported on six wheels. The coaching-engines have each one pair of

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to Locomotive
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No. 20.
Liverpool and
Manchester.

driving-wheels five feet diameter, one pair front wheels three feet six inches diameter, and one pair hind wheels three feet or three feet six inches diameter. The goods-engines have each two pair of five-feet wheels coupled together, and one pair of three-feet or three-feet-six-inch hind wheels.

The weight of our engines is about fourteen tons, and is thus distributed :—

	Tons.	Cwt.	Qrs.
Front pair of wheels	5	0	0
Driving-wheels	7	0	0
Hind wheels	2	0	0
Total	14	0	0

The journals of the axles are outside the wheels, and run in brasses, accurately fitted into guards, bolted on to an outside framing, such brasses being constructed to slide vertically in the axle-guards to an extent equal to the play of the springs.

The standard dimensions of the axle-journals are as follows :—

For five-feet wheels, six inches long by three inches and a half diameter.

For three-feet-six, and three-feet wheels, six inches long by three inches and a quarter diameter.

The crank axles of our engines of most modern construction have, in addition to the outside bearings, bearings also inside the wheels, upon which inside bearings part of the weight of the engine is distributed through the medium of springs. The journals for the inside bearings are three inches and a half long by five inches and a quarter diameter.

3. The names of the makers are—

For the Liverpool and Manchester Railway Company:

Messrs. Charles Tayleur and Co., Warrington.

Messrs. Mather, Dixon, and Co., Liverpool.

For the Haigh Foundry Company, Wigan:

Messrs. Benjamin Hick and Son, Bolton.

Messrs. Rothwell and Co. Bolton.

Messrs. Hawthorne and Co., Newcastle-upon-Tyne.

Mr. Banks, Manchester.

Messrs. Todd, Kitson, and Laird, Leeds.

4. The Directors made use originally of four-wheeled engines, but observing that a considerable pitching and sinuous motion took place, especially where the road was at all out of order, or when the speed of the train was great (an evil increased perhaps by the circumstance of the rails at that time being too weak for the traffic to which they were subjected), and which was injurious to the rails as well as objectionable on other grounds, they gradually introduced a third pair of wheels to each engine to carry part of the overhanging weight of the fire-box, and so resist the action of any irregular force tending to elevate the front wheels or depress the driving-wheels.

The alteration has, they conceive, conduced to the safety of the travelling on this railway, and has been attended with benefit to both the engines and the roads, an increased steadiness of motion having invariably followed the application of the third pair of wheels.

5. The Directors do not consider any description of engine of whose working they have had experience to be peculiarly dangerous.

6. Extra engines are occasionally used for drawing trains on the Liverpool and Manchester Railway.

7. No engine is allowed to propel before it a train of carriages or waggons, but must in all cases draw the same after it, except when assisting up the inclined planes, the inclination of which varies from one in eighty-nine to one in ninety-six, or in case of an engine being disabled on the road, when the succeeding engine may propel the train slowly as far as the next shunt or turn-out, at which place the said propelling-engine must take the lead.

8. The Directors do not consider the use of an extra engine in front to be attended with danger. They consider the use of an extra engine behind as an additional source of danger, except in the cases described in answer to question 7, that of propelling at a moderate speed up the inclined planes; and the unavoidable one arises from the engine in front being disabled.

9. This Company's engines are not allowed to run with passenger-trains tender foremost; coal or ballast-engines run occasionally tender foremost, but the load is invariably placed behind.

We are &c.

HENRY BOOTH, Treasurer.

EDWARD WOODS, Principal Engineer.

S. Laing, Esq.
&c. &c.

No. 21.

No. 21.
Edinburgh and
Glasgow.

EDINBURGH AND GLASGOW RAILWAY.

SIR,

Edinburgh, October 25, 1841.

THE Secretary received your letter to him of the 11th instant, and I am instructed by the Directors to return the following answers to your questions :—

1. The line not being opened, there are no engines employed on traffic. The Directors have contracted for twenty engines to work the line, seventeen of which have been delivered.

2. The engines have all cylinders thirteen inches diameter and 18-inch stroke. Ten of them are according to Mr. Bury's plan, viz., four wheels, cranked driving axle, and inside

bearings; three of these engines are coupled, having five feet driving-wheels, and seven of them single or passenger-engines with five feet and a half driving-wheels: they are made by Mr. Bury, and strictly on his plan. The other ten engines are on what may be termed Mr. Stephenson's plan, viz., six wheels, cranked driving axle, and outside bearings. The crank axles are five inches and a half diameter at the crank-pins. All the outside bearings are three inches and a half diameter, and five inches and a half long; the front and hind axles are four inches and a half diameter. Three of these six-wheeled engines are coupled, having the driving and hind-wheels five feet diameter; and the other seven are single engines, having the driving-wheels five feet and a half diameter. The front wheels of the coupled engines and front and hind wheels of the single engines are three feet and a half diameter. The weighing-machines are not yet fitted up on the line so as to ascertain the exact weight of the engines; it is presumed that the coupled six-wheeled engines will be about twelve tons, and the single six-wheeled engines about eleven tons and a half; the weight on the front wheels has not yet been adjusted, but it will be about three tons and a half or four tons.

3. Mr. Bury, of Liverpool, made the ten engines, which are on his plan; and Messrs. Hawthorne, of Newcastle, made the ten six-wheeled engines.

4. The Directors have not yet had any experience of their engines. They were inclined to order both forms of engine in consequence of the high recommendation which each received, and the difficulty of ascertaining to which form the preference ought to be given.

5. The Directors not having had any experience of their engines, cannot give any answer to this question.

6, 7, 8, and 9. The line not being opened, answers cannot be given to these questions.

I have, &c.

S. Laing, Esq.,
&c. &c.

J. MILLER, Engineer.

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No. 21.
Edinburgh and
Glasgow.

No. 22.

NORTHERN AND EASTERN RAILWAY.

Office, High Street, Shoreditch, October 26, 1841.

1. The number of engines is eight.

2. The engines are all six-wheeled, with outside frames and bearings. Seven engines have six feet driving-wheels, and four feet leading and trailing wheels, with 14-inch cylinder, and 18-inch stroke; one engine has five feet six inches driving-wheels, and three feet six inches leading and trailing; in all other respects similar to the other engines. Weight eighteen tons, including coke and water; or, eight tons on the driving-wheels, six tons on the leading wheels, and four tons on the trailing wheels.

3. Makers:—Robert Stephenson and Co., C. Tayleur and Co., Longridge and Co.

4. The Northern and Eastern line of railway, though generally very level, yet having many stations, and subject to very heavy passenger-trains, requires a high rate of speed to be maintained: hence a powerful class of engine is required, and those on account of their size and weight could not be placed on four wheels with safety.

5. No other class of engines than those named above, all with six wheels and outside bearings, having been used by the Northern and Eastern Railway, the Directors have no experience to enable them to form a comparative judgment upon engines of other construction, but with the view of ensuring the safety of the public, they have adopted all six-wheeled passenger-carriages, and they have every reason to be satisfied with the result.

6. Yes, on extraordinary occasions.

7. Always in front.

8. The use of an extra engine is thought undesirable, but the Directors have had no proof of any danger from their use.

9. Yes; but under special instructions as to speed, viz., twenty-five miles per hour; or, a well-seasoned power, fifteen miles per hour, on a new road, the usual speed of the trains being forty miles per hour.

N. B.—The tenders are also on six wheels, otherwise running tender foremost would not be permitted at all.

No. 22.
Northern and
Eastern.

No. 23.

MANCHESTER, BOLTON, AND BURY CANAL NAVIGATION AND RAILWAY.

Office, New Bailey Street, Salford,
October 27, 1841.

SIR,

IN reply to the questions contained in your communication of the 11th instant, I have been directed to forward the following information:—

1. This Company have ten locomotive engines.

2. Eight of their engines are on Mr. Bury's plan, with four wheels of equal size, five feet in diameter, and coupled together with inside bearings; the other two were made by Mr. Forrester: they have four wheels, not coupled; the driving wheels are five feet, the fore wheels four feet, in diameter. The weight, in Bury's engines, is nearly equally disposed on the fore and hind wheels, being 97 cwt. on the first and 98 cwt. on the second. In Mr. Forrester's

2 E 2

No. 23.
Manchester,
Bolton, and Bury
Canal Navigation.

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No. 23.

Manchester,
Bolton, and Bury
Canal Navigation.

engines there is 116 cwt. on the driving wheels and 85 cwt. on the fore wheels : these engines have outside bearings.

3. Four of the eight engines on Mr. Bury's plan were made by himself, the other four by Mr. Fairbairn, of Manchester. Mr. Forrester, of Liverpool, made the other two engines.

4. The Committee of Management have every reason to be satisfied with both descriptions of engine in their possession ; and, without laying much stress on " preference," since their experience has been confined to two kinds only, they conceive that by this experience they would be induced, did they require additional engines, to obtain others similar to those made by Mr. Bury in their possession. They consider the fact of their having used these engines three years and a half without injury to any passenger, and without an engine running off the rails, except in a case caused by switches being wrong placed, to be more expressive on the subject than much matter of mere opinion.

5. The Committee are not aware of any dangerous form of engine.

6. Extra engines have not been employed more than three or four times since the opening of the railway.

7. Such extra engines were sent behind on these occasions from necessity.

8. The Committee, on their line, would prefer dividing the trains, generally, to sending extra engines either before or behind.

9. Engines never run tender foremost, except in the case of the engine exclusively employed in picking up coal-waggons a few miles up the line.

I have, &c.

S. Laing, Esq.
&c. &c.

JOHN HAWKSHAW.

No. 24.

No. 24.
Birmingham and
Derby Junction.

BIRMINGHAM AND DERBY JUNCTION RAILWAY.

October 19, 1841.

ANSWERS to Inquiries made by the Board of Trade respecting Locomotive Engines :—

1. What number of engines are employed upon the Birmingham and Derby Junction Railway?—Twelve passenger-engines and two goods-engines.

2. What is the construction of such engines, specifying the number of wheels and their diameter, the weight of the engine, the weight on the front wheels, the construction of the axles and bearings, and any other particulars bearing upon the question of safety?—The passenger-engines are constructed with six wheels, the driving-wheels being five feet six inches in diameter and the small wheels three feet six inches in diameter. The goods-engines are similarly constructed, except the front and driving-wheels are five feet in diameter, coupled by outside connecting rods. The weights in working state are as follow :—

		Total weight.			Weight on the front wheels.		
		Tons.	Cwts.	Qrs.	Tons.	Cwts.	Qrs.
Passenger-engines .	Derwent, Trent, and Dove . . .	14	11	2	4	13	0
	Anker, Tame, and Blythe . . .	13	10	0	4	0	0
	Tamworth, Barton, and Hampton . .	13	16	0	4	7	0
	Derby, Burton, and Birmingham . .	13	15	0	4	5	0
Goods-engines . .	Kingsbury and Willington . .	about 15	10	0	5	0	0

The axles of the driving-wheels are cranked, with inside bearings five inches and a half in diameter, and the outside bearings three inches and a half in diameter. The axles of the small wheels of the engines and of the wheels of the tenders are four inches and three quarters in diameter, with outside bearings three inches and a half in diameter. The driving wheels were all originally without flanges, but those subsequently retired have flanges.

3. What are the names of the makers of such engines?—Messrs. Sharp, Roberts, and Co. makers of the first, second, and third ; P. R. and W. Hawthorne, of the fourth, fifth, and sixth ; Mather, Dixon, and Co. of the seventh, eighth, and ninth ; Charles Tayleur and Co. of the tenth, eleventh, and twelfth ; and Thompson and Cole of the thirteenth and fourteenth.

4. What description of engines have the Directors been led by their experience to prefer, and for what reasons?—The Directors have adopted six-wheeled engines on the recommendation of their engineers, who believe them to be safer than four-wheeled engines, and less injurious to the road.

5. Have the Directors been led by their experience to consider any particular description of engines as peculiarly dangerous, and if so, for what reasons?—The Directors have not tried any other description of engines.

6. Are extra engines ever employed on the Birmingham and Derby Railway in propelling trains?—Yes.

7. If so, is the extra engine applied in the front of the train or behind?—In front, unless in case of accident, when the assistant engine, in order to avoid running on the wrong line, is applied behind, and proceeds slow until the train arrives at the nearest station, when it is placed in front.

8. Have the Directors been led by their experience to consider the use of an extra engine in front or behind as an additional source of danger?—The Directors consider the use of an extra engine objectionable, but they have no experience on their own line as to the danger of the practice, no accident or inconvenience having resulted from it.

9. Are engines ever allowed to run tender foremost upon the Birmingham and Derby Junction Railway?—Not with passenger trains on the Birmingham and Derby Railway,

except when used as pilot engines. On the London and Birmingham Railway the engines of the Birmingham and Derby Junction Railway Company run tender foremost with some of the trains, in consequence of the turn tables on the Birmingham station not being sufficiently large to turn six-wheeled engines. This practice will be discontinued in the course of a few months, when the new line into Birmingham will be opened.

JOHN C. BIRKINSHAW.

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Returns relating
to Locomotive
Engines.

No. 25.

NORTH MIDLAND RAILWAY.

Derby, 28th October, 1841.

1. What number of engines are employed upon the North Midland Railway?—The number of engines 40.

2. What is the construction of such engines, specifying the number of wheels and their diameter, the weight of the engine, the weight on the front wheels, the construction of the axles and bearings, and any other particulars bearing upon the question of safety?—The engines are all six wheeled, with outside frames and bearings:—

17 engines have six feet driving wheels, and four feet leading and trailing wheels, with 14-inch cylinders, 18-inch stroke; weight, eighteen tons, including coke and water, or eight tons on the driving wheel, six tons on the leading wheel, and four tons on the trailing wheel.

3 engines are exactly similar to the above, except with wheels six inches smaller in diameter.

10 engines have five feet leading and driving wheels, coupled together, and three feet six inches trailing wheels, and similar to the former in the other particulars.

10 engines have five feet six inches driving wheels, and three feet six inches leading and trailing wheels, with 13-inch cylinders, 18-inch stroke; weight, fifteen tons total, distributed in a similar proportion to the above.

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3. What are the names of the makers of such engines?—The makers' names are: R. Stephenson and Co.; Fenton, Murray, and Jackson; R. and W. Hawthorne; C. Tayleur and Co.; Longridge and Co.; Thompson and Cole; Laird and Kitson; Mather and Dixon; and Shepherd and Todd.

4. What description of engines have the Directors been led by their experience to prefer, and for what reasons?—The North Midland being a line with prevailing gradients of sixteen feet per mile, and on account of its numerous junctions being obliged to run more carriages than is usual in proportion to the number of passengers, the most powerful class of engines named above are preferred, and those, on account of their size and weight, are considered to require placing upon six wheels.

5. Have the Directors been led by their experience to consider any particular description of engine as peculiarly dangerous; and if so, for what reasons?—No other class of engines than those named above, all with six wheels and outside bearings having been used by the North Midland Railway, the Directors have no experience to enable them to forward a comparative judgment upon engines of other constructions.

6. Are extra engines ever employed upon the North Midland Railway in propelling trains?—Yes; but as the exception, and then generally for only a short distance.

7. If so, is the extra engine applied in front of the train or behind?—In front; an engine being never allowed to push a train beyond the nearest shunt.

8. Have the Directors been led by their experience to consider the use of an extra engine, either in front or behind, as an additional source of danger?—The use of an extra engine is considered objectionable; but the Directors have no experience which would lead them to characterize it as a source of danger.

9. Are engines ever allowed to run tender foremost upon the North Midland Railway?—Never, when it can be avoided; except in the case of a single mineral train, which conveys empty waggons at a moderate speed.

H. PATTESON, Secretary.

No. 26.

MIDLAND COUNTIES RAILWAY.

No. 26.
Midland Counties.

1. The number of engines constituting the present working stock is thirty-seven, which number comprises twenty-nine passenger engines, six for merchandise, and two ballast engines.

2. Of the above number, thirty-five are four wheeled, and two of the goods-engines six wheeled: the particulars of each are fully detailed in the accompanying table.

3. Eighteen were made by Mr. Edward Bury, of Liverpool; nine by Messrs. Hick and Son, of Bolton; five by Messrs. Nasmyths and Gaskill, of Manchester; one by Messrs. Jones, Turner, and Evans, of Newton; two by the Butterly Company; and two ballast engines by Mr. Fairburn, of Manchester.

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 to Locomotive
 Engines.
 No. 26.
 Midland Counties.

4. This inquiry involving, as it does, one of the most difficult questions that have lately occupied the attention of scientific men, many of which are not matters of fact, but merely of opinion, requires that several effects should be taken into consideration in order to answer it fully, which effects are only made evident by the actual working of the engine on the line. Every engine, whilst in a state of progression, is subject to several peculiar motions or actions on the rails, which actions vary in effect on four-wheeled and six-wheeled engines. The chief of these are a rocking or rolling motion, caused by a difference in the level of the two rails, and which may be said nearly equally to affect all engines.

Then there is an oscillating motion, horizontally and transversely to the line of rails, which may be produced by change in the direction of the road, which causes the flange of either wheel to strike against the rail, and as the conical form of the periphery of the wheels is constantly counteracting or correcting the effects of this action, the engine naturally receives a lateral vibratory motion, which is maintained for a greater or less period, according to the existing circumstances of the line or the correctness of the gauge of the rails. The effects of this action is more sensibly felt by six-wheeled than by four-wheeled engines, owing to their greater length and number of bearings on the rail, and the consequent strain on the whole system or body of the engine much greater. There is also a perpendicular or jumping motion, which is in some degree produced by the effects of the actions above named, also by any deflection of the rails, or by any irregularity at the junctions of the rails. This motion affects engines in different degrees under different circumstances; but, inasmuch as it is produced by the two above-named, and especially by the latter-named motion, it will be more sensibly felt by six-wheeled engines on curved lines, while on straight lines it may possibly affect four-wheeled engines the most, owing to their short bearing on the rails.

The strain upon the axles (which, as regards their safety, is one of the chief points for consideration in the construction of locomotives) caused by these different actions is far greater in six-wheeled than in four-wheeled engines, owing to the great difference in the distance between the extreme points of support, and consequently the liability to break their axles is greater in proportion to the former than in the latter-named; and this point has been fully and practically proved by the number of broken axles which have occurred and are constantly occurring in six-wheeled engines, whilst in four-wheeled such fractures have been of very rare occurrence, and these few, as the cases have shown, have invariably been from imperfect workmanship in their construction. During the two years and a half this Company have been working four wheeled engines, they have never had an instance of a broken engine axle. The peculiar lightness of the four-wheeled engines is another argument in their favour, as they cause less wear and tear to the road on this account than the six wheeled, those of the most recent manufacture of the latter class, by the first houses of the day, being nearly 50 per cent. heavier than the former. In going through the points and crossings, also, the shortness of the four-wheeled engine is of very great advantage, as it enables the engine to adjust itself much more readily to the form of the road than the six wheeled, and consequently diminishes the liability to derangement both of engine and road. The whole weight of the after part of the engine, in the case of four wheels, being thrown directly on the driving wheels, gives them a better and much more uniform adhesion to the rails, and consequently diminishes the liability to slipping; and this affects under many circumstances the locomotion of a much more considerable load.

These reasons, aided by their own experience, both as regards economy and safety, have confirmed the Directors in the opinion they were originally led to entertain, more especially as the practical working of other extensive lines has fully corroborated these results in favour of four wheeled engines.

5. No; when the engines are properly constructed.

6 and 7. Extra engines are never used for propelling trains, except for short distances in cases of great emergency or assisting to start a heavy load. In cases of emergency, when an engine is obliged from locality to propel for a short distance, she invariably takes the lead at the first siding or shunt. Extra engines are frequently used in front, assisting other engines with heavy trains.

8. Do not consider that there is any danger in using extra engines in front, but rather that it is a very advantageous distribution or application of power, and better than dividing the train into two, and safer; inasmuch as one train is regular and expected, and two would be irregular, and consequently create a degree of risk: one train could also better maintain punctuality, and punctuality is highly essential to safety. There would, however, be a degree of danger in applying extra engines behind, as the latter engineman has no means of communication with the one in front, and could not consequently be warned of any danger in advance; there would also be a considerable degree of risk, especially on curved lines, of the carriages being thrown off the line at that part of the train where the motive force was changed from traction to propulsion, as the forces would communicate motion to the train by different actions, and consequently in different directions, and the leading propelled carriage would be liable, on curves, to be forced or lifted off the rails.

9. Engines are on no account allowed to run tender first on the Midland Counties Railway, except in cases of extreme emergency, and then in as short a distance as possible.

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Number of Engines of this Description.	Diameter of Cylinders.	Length of Stroke.	Size of Driving Wheels.	Size of Leading Wheels.	Total Weight of Engine.	Weight of Fore part.	Weight of After part.	Weight of Leading Wheels and Axle.
17	Inches. 12	Inches. 18	Feet. Inches. 5 6	Feet. 4	Tons. Cwt. 11 1	Tons. Cwt. 4 6	Tons. Cwt. 6 15	Tons. Cwt. 0 17
11	13	18	5 6	4	12 4	4 17	7 7	0 18
4	13	18	5 0	5	12 6	5 7	6 19	1 6
1	11	16	5 0	..	9 10	3 12	5 18	0 15

Number of Engines of this Description.	Weight of Driving Wheels and Axle.	Weight on Leading Axle.	Weight on Driving Axle.	Diameter of Bearings of Leading Axle.	Length of Bearings of Leading Axle.	Diameter of Bearings of Driving Axle.	Length of Bearings of Driving Axle.	Distance between Centres of Wheels.
17	Tons. Cwt. 1 9	Tons. Cwt. 3 9	Tons. Cwt. 5 6	Inches. 4½	Inches. 7	Inches. 5	Inches. 7	Feet. In. 5 6
11	1 12	3 19	5 15	4½	7	5	7	6 0
4	1 9	4 1	5 10	4½	7	5	7	6 3
1	1 8	2 17	4 10	3	4½	4½	5	5 9
								4 11

The above are all four-wheeled engines, and with the exception of the last named, have all cranked axles, and have the bearings inside the wheels. The last named has outside bearings and the power applied externally to cranked arms outside the wheels.

Number of Engines of this Description.	Diameter of Cylinders.	Length of Stroke.	Size of Driving Wheels.	Size of Leading Wheels.	Total Weight of Engine.	Weight on Leading Wheels.	Weight on Driving Wheels.
1	Inches. 14	Inches. 18	Feet. Inches. 5 0	Feet. Inches. 3 6	Tons. Cwt. 14 18	Tons. Cwt. 4 8	Tons. Cwt. 6 0
1	13	18	5 6	3 9	14 18	3 18	5 10

Number of Engines of this Description.	Weight on Trailing Wheels.	Diameter of Bearings of Leading Axle.	Length of Bearings of Leading Axle.	Diameter of Bearings of Driving Axle.	Length of Bearings of Driving Axles.	Distance between Extreme Points of Support.
1	Tons. Cwt. 1 10	Inches. 3½	Inches. 6½	Inches. 5½	Inches. 6½	Feet. Inches. 10 6
1	1 19	3½	4½	4½	3½	11 0

Both of these engines have six wheels, the former has outside bearings and a cranked axle, and the latter outside bearings, and cylinders outside the frames: power applied to crank arms outside the wheels; the weights given are the actual weight on the axles, that is, exclusive of the axle and wheels: the trailing wheels are the same dimensions as the leading wheels.

All the weights are given with water and fire in, and steam up ready for work. It is not thought necessary to enter into detail of the ballast engines, save that they have inside bearings and cranked axles, and construction similar to the first named.

No. 27.

GRAND JUNCTION RAILWAY.

No. 27.
Grand Junction.

SIR,

Liverpool, October 28, 1841.

IN reply to your circular, under date 11th October, I am desired by the Board of Directors to send for your information the following answers to your questions:—

1. What number of engines are employed upon the Grand Junction Railway?—67 engines.
2. What is the construction of such engines, specifying the number of wheels, and their diameter; the weight of the engines; the weight on the front wheels; the construction of the axles and bearings; and any other particulars bearing upon the question of safety?—They are all placed on six wheels; 25 engines have five feet driving wheels, and three and a half feet front and hind-wheels, and are about 13 tons weight. All the rest have five and a half feet driving-wheels, and have boilers and cylinders a little larger than the former. They are, however, similar to them in other respects, and weigh about 14 tons. These latter engines being more powerful than the former, are now chiefly used in running the passenger and mail-trains. The weight on the front axle is five tons; driving-axle six and a half tons, and hind-axle two and a half tons, or thereabouts. The axles have all outside bearings, and two additional bearings with springs have recently been placed on the driving axle, near to the wheel. The driving-axle is cranked, and is six and a quarter inches diameter in the thickest part, and five and a half inches in the smallest part. The Company has three engines with straight driving-axes and outside cylinders. One of them, unlike any of the others, has bearings on the inside only of the driving-wheels, but on the fore and hind-wheels the bearings are outside.
3. What are the names of the makers of such engines?—Messrs. Sharp, Rogers, and Co.; Rothwell and Co.; Haigh Foundry Company; Stephenson and Co.; Hawthorne and Co.; Mather Dixon and Co.; Forrester and Co.; Tayleur and Co.; Jones and Co.

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 No. 27.
 Grand Junction.

4. What description of engines have the Directors been led by their experience to prefer, and for what reasons?—The Directors have been influenced in their choice of engines by the advice of their engineer-in-chief, whose has invariably preferred those on six wheels as being safer, steadier, and less destructive to the road. His opinions and reports on this subject before the railway was completed fully satisfied the Directors of the propriety of the course they pursued, and subsequent experience has not in the least degree shaken their faith in the soundness of the advice on which they acted. It has often been alleged that with engines placed on four wheels there was a great economy in the working arising from the greater lightness of those engines, and in some supposed advantage of construction; but the Directors of this Company, having come to the conclusion that an engine on six wheels was steadier and safer than one placed on four, determined, even though there might be some apparent pecuniary sacrifice, to persevere in the use of engines on six wheels.

5. Have the Directors been led by their experience to consider any particular description of engines as peculiarly dangerous, and if so, for what reasons?—The Directors do not wish it to be understood that they consider the four-wheeled engines unsafe, for they have not collectively any experience of their use; they, moreover, believe that they have been used on an adjoining railway safely and successfully.

6. Are extra engines ever employed upon the Grand Junction Railway in propelling trains?—Extra engines are employed.

7. If so, is the extra engine applied in front of the train or behind?—They are used in front of the engine.

8. Have the Directors been led by their experience to consider the use of an extra engine either in front or behind as an additional source of danger?—The Directors have not considered the use of an extra engine in front an additional source of danger, but they do not permit any engine to push a train excepting under extraordinary circumstances, and then only at a reduced speed.

9. Are engines ever allowed to run tender foremost upon the Grand Junction Railway?—Engines are not allowed to run tender foremost with the trains. An extra engine assisting a train for a short distance is allowed to return tender foremost. Under no other ordinary circumstances is it allowed.

I am, &c.

S. Laing, Esq.,
 &c. &c.

MARK HUISH, Secretary.

No. 28.

No. 28.
 London and
 South-Western.

LONDON AND SOUTH-WESTERN RAILWAY.

1. Forty-eight engines.

2. All the engines on this line (with the exception of four) are placed on six wheels, the front and hind-wheels being three and a half feet diameter, and the driving-wheels five and a half feet diameter. The driving-axle is cranked, and is provided with an inside bearing, as well as one outside; the bearings on the front and hind-wheels are outside. The weight is about fourteen and a half tons; viz. five on the front-axle, seven on the driving, and two and a half on the hind-axle. A few of the six-wheeled engines are used for carrying goods, and have the front and driving-wheels coupled together. These wheels are four and a half feet diameter. In other respects they are similar to those above described. The four engines on four wheels are constructed with inside bearings. The diameter of the front wheels is four feet, and the driving-wheels five and a half feet.

3. Messrs. Sharpe, Roberts, and Co.; Fenton, Murray, and Jackson; Rothwell and Co.; Tayleur and Co.; G. and J. Rennie; Jones and Co.; Bury, Nasmyth, Gaskell, and Co.

4. The Directors have been influenced in their choice by the advice of their engineer-in-chief, who has invariably recommended engines on six wheels, as running steadier on the rails, and doing less injury to the road. The introduction of four engines on four wheels occurred at a time when it was believed that some advantage might be expected from them. It never occurred to the Directors that these engines were unsafe, and the experience they have had with them, although confined to the short trains between London and Woking is not such as to induce that belief, for there is no instance of an accident arising from any peculiarity of their construction.

5. The Directors do not consider that any of the engines used on this line are "peculiarly dangerous," hence they have not had any accident which could be attributed to the construction of either description of engine.

6. Extra engines are sometimes employed on this railway.

7. They are used in front of the train.

8. The Directors have not considered the use of an extra engine as an additional source of danger. They do not permit an engine to push a train, excepting under extraordinary circumstances, and then only at a reduced speed.

9. Engines with trains are not allowed to run tender foremost. An extra engine, after assisting a train, is allowed to return tender foremost: under no other ordinary circumstances is it allowed.

No. 29.

DUBLIN AND KINGSTOWN RAILWAY.

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Engines.No. 29.
Dublin and
Kingstown.

SIR,

October 27, 1841.

I HAVE the honour to acknowledge receipt of a letter, under date the 11th instant, from the Lords of the Privy Council for Trade, requesting returns to several questions relative to the locomotive engines employed on this railway, and the mode of working.

I have been unable from press of business to reply at an earlier date.

I now beg to hand you for the information of their Lordships the questions proposed, with replies thereto.

I am, &c.

T. F. BERGIN.

G. R. Porter, Esq.,
&c. &c.

1. What number of engines are employed on the Dublin and Kingstown Railway?—Ten.
2. What is the construction of such engines, specifying the number of wheels, and their diameter, the weight of the engines, the weight on the front-wheels, the construction of the axles and bearings, and any other particulars bearing upon the question of safety?—At the outset this Company adopted as the fundamental principle of their engines that they should have straight driving axles, the result of their inquiries leading them totally to reject the cranked axle, and the result has fully justified this decision, as there has never been a broken driving-axle on the railway.

Their original stock of engines was six, all with four wheels. Three of them had horizontal cylinders, outside bearings, and driven by ordinary cranks on the ends of the axles. The other three had vertical cylinders, with a bill crank motion, inside bearings for the driving-wheels, which were driven by a crank pin in the nave of the wheel; and outside bearings for the smaller or bearing-wheels, all with five feet driving-wheels, three feet bearing-wheels, and having tenders. Immediately after opening, it was manifest that the tender was a cause of material delay at the end of each trip, so much so as to render it difficult to be ready in time for the return journey, and it being found necessary to have two additional engines, they were ordered with horizontal cylinders, and in all respects similar to the former, except that provision was made for carrying supplies of coke and water without having a tender, and the front or bearing-wheels were increased to three feet six inches in diameter. The performance of these was so satisfactory that the original three horizontal engines had water tanks and coke stages added as soon as practicable. The vertical engines did not admit of being so altered. About this period, it was observed that the rails, the heaviest by several pounds per yard which had then been used, were getting seriously bent between the chains by which they were supported; there was some reason to believe that at all events a portion of this effect was attributable to the increased weight of the engines, which, with their tanks, weighed each about fourteen tons. The vertical engines were also believed to bear their part in this bending operation; the peculiar action of the bell crank motion causing a portion of the pressure on the piston to act directly in pressing one part of the machine downwards against the rails, causing at the same time a vibrating or rocking motion in the whole engine, extremely injurious to itself, and exciting considerable doubts as to its security. As a remedy for both these evils, the increased weight of the horizontal engine and the vibrating action of the vertical ones, it was determined to add a third pair of wheels, which has been done in every instance but two.

Within the last year the Company have built two locomotives in their own shops, making the whole number ten. These have six wheels, horizontal cylinders, straight axles, outside bearings, and water tanks; and there are at present three more precisely similar engines in progress. The original four-wheeled engines, with their boilers filled, weigh about eleven tons, of which about seven was on the driving axle. The two first four-wheeled tank engines, with their boilers and tanks full, weigh about fourteen tons, of which about nine rested on the driving-wheels.

I am not able to say what is the distribution of weight since the third pair of wheels has been added; certainly it has decreased the weight on large wheels, the desirable proportion of which is determined experimentally in the first instance by varying the length of the spring pins till such proportion of the weight is thrown on those wheels as trial proves to be most efficacious. As to the question of safety, in case of a broken axle, our experience does not enable me to give any opinion. I have already said we have never broken a driving axle; we have frequently broken front axles, but such accidents have never been attended with any serious consequences, the engines not falling. Once only have we had a broken wheel, (not a driving one); this occurred with a six-wheeled engine, and it was the only instance in which from any accident to wheels or axles we have had an engine turned absolutely upside down. In the absence of experience on this subject, I would say my own impression is that on straight lines or curves of long radii (say a mile) the six-wheeled engine is the safest, inasmuch as there is less weight, and of course less strain on each axle: also in the event of a wheel or axle breaking there still remains at least four points of support, consequently there is comparatively little danger of the engine tipping over; but with curves of short radii, the increased distance between the front and hind-wheels unquestionably increases the tendency to get off the rails.

This it is true has never occurred on this railway, from whence we may infer that with curves of half a mile radius, and a distance between front and hind-wheels not exceeding

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twelve and a half feet, the tendency I refer to is to be counteracted by proper coning of the wheels, and an adequate amount of side play in the axles.

3. What are the names of the makers of such engines?—The three original horizontal engines with tenders, and the two first with tanks, were built by George Forrester and Co., of Liverpool; the three vertical engines by Sharp, Roberts, and Co., of Manchester; the two new six-wheeled tank engines have been built in the Company's own establishment; and three others precisely similar are now in progress.

4. What description of engines have the Directors been led by their experience to prefer, and for what reasons?—Similar to the two already built, and to those in progress in their own workshops; namely, straight axles, five feet driving wheels, three feet six inches and three feet bearing-wheels, outside bearings, and furnished with water tanks and coke stage so as to dispense with tender.

In consequence of the weight it is deemed advisable to use six wheels, experience having shown that any objection arising from curves, such as are on this line, is more than counter-balanced by the diminished action on the road, the maintaining of which in good order is so conducive to the safety of the trains.

5. Have the Directors been led by their experience to consider any particular description of engine peculiarly dangerous, and if so, for what reason?—The experience of the Directors lead them to think there is not any difference in this respect amongst the various engines on this railway.

6. Are extra engines ever employed on the Dublin and Kingstown Railway in propelling trains?

7. If so, is the extra engine applied in front of the train or behind?

8. Have the Directors been led by their experience to consider the use of an extra engine either in front or behind as an additional source of danger?

Answer to 6, 7, and 8.—Extra engines are never employed on this railway.

There are not any inclines to require their aid, and if more passengers offer than can be taken by one engine they must wait till the next train.

9. Are engines ever allowed to run tender foremost upon the Dublin and Kingstown Railway?—As a general rule, never, not even when returning to the engine station after the arrival of the last train. On a few occasions, when from various causes it has been impracticable to turn the engine, those with tanks have (as far as possible) alone been used, it being indifferent which end of them runs foremost.

T. F. BERGIN.

No. 30.
Taff Vale.

No. 30.

TAFF VALE RAILWAY.

Number of Engine.	Name of Maker.	Number of Wheels.	Number of Wheels Coupled.	Diameter of Driving Wheels.		Diameter of Front Wheels.		Diameter of Hind Wheels.		Diameter of Cylinder.	Length of Stroke.	Weight of Engine with Steam up.		Weight on Front Wheels.
				ft.	in.	ft.	in.	ft.	in.	in.	in.	tons.	cwt.	tons.
2	Sharp, Roberts, & Co..	6	..	5	6	3	6	3	6	13	18	14	16	4 14
2	Ditto	6	4	4	6	4	6	3	6	14	18	17	..	5 15
4	Hawthorn	6	4	4	6	4	6	3	6	14	18	15	5	5 10
8	Total Number of Engines employed.													

Extra Engines are not employed in propelling Trains.

Engines are allowed to run occasionally tender foremost, with empty coal waggons.

JOSEPH BALL, Secretary.

No. 31.
Dundee and
Arbroath.

No. 31.

DUNDEE AND ARBROATH RAILWAY.

SIR,

Dundee, October 30, 1841.

IN compliance with the request contained in your letter to me of the 11th current, I now beg leave to send you the following returns to the questions therein asked:—

1. Six locomotive engines are employed on this line of railway.

2. Our engines are all six-wheeled, with outside cylinders. Three of them have driving wheels of five feet diameter, leading and travelling wheels three feet six inches diameter; and the other three have driving wheels of five feet six inches diameter, with leading and travelling wheels three feet six inches diameter. The gross weight of each of the three with small driving wheels is twelve tons when charged, and the weight on the leading wheels three tons sixteen hundred weights; the weight of those with large driving wheels is twelve tons thirteen hundred weights, and the weight upon the leading wheels four tons eleven hundred weights; the driving axles of the whole of them are straight, and they have all inside bearings.

3. The whole of this Company's engines were made by Messrs. Kinmond, Hutton, and Steel, of the Wallace foundry, Dundee, under the directions of the Company's consulting engineer, Mr. Millar, of Messrs. Grainger and Millar, Edinburgh.

4. The Directors have had no experience of any other description of engines than the above, and they were induced by their engineer, Mr. Millar, to prefer them with outside cylinders, inside bearings, and straight axles, as being of the safest construction; and they have, after three years' experience, had no reason to regret following his advice, as no accident has ever occurred from the peculiarity of their construction, nor have any of them ever run off the rails.

5. Having no engines constructed otherwise than the above, the Directors cannot speak from their own experience of the danger to be apprehended from engines made upon a different principle.

6. Extra engines have been employed to propel trains on two or three occasions, not oftener.

7. Extra engines have always been applied behind the trains.

8. The Directors from their own practical experience are not aware that the danger is increased from applying an extra engine either in front or behind; but there can be no doubt that the danger is increased, especially when the extra engine is placed behind the train.

9. No engines are allowed to run tender foremost on this line.

G. R. Porter, Esq.,
&c. &c.

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Returns relating
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No. 31.
Dundee and
Arbroath.

No. 32.

MARYPORT AND CARLISLE RAILWAY.

ANSWERS to the Questions sent by the Railway Department, Board of Trade, respecting the Engines employed on the Railway above named.

1. Two engines are employed on eight miles of railway, principally for carriage of coal for shipment at Maryport; the remainder of the line to Carlisle, twenty miles, not being yet completed, but in the course of execution.

2. No. 1 engine. Six wheels,—two driving wheels of five feet, and four end wheels of three feet six inches diameter; 12-inch cylinders, 18-inch stroke, ten tons' weight; weight on front wheels four tons.

No. 2 engine. Six wheels, four feet six inches each; 14-inch cylinder, 18-inch stroke, twelve tons' weight; weight on front wheels four tons fifteen hundred weights.

The construction of the axles and bearing are the same as a great majority of engines now made with outside frames. They run steadily and safe.

3. The names of the makers of both engines are Messrs. Tulk and Ley, Iron Works, near Workington.

The engines answer the present purpose; but some of different construction will probably be adopted when the line is opened throughout.

The Directors have had no experience in dangerous engines on their line.

Extra engines have not yet been employed.

The engines do not run tender foremost, excepting occasionally in the yard.

G. R. Porter, Esq.,
&c. &c.

No. 32.
Maryport and
Carlisle.

No. 33.

ARBROATH AND FORFAR RAILWAY.

RETURN to Circular from the Railway Department, Board of Trade, dated October 11, 1841.

Arbroath and Forfar Railway Office, Arbroath,
November 2, 1841.

1. What number of engines are employed upon the Arbroath and Forfar Railway?—Five locomotive engines.

2. What is the construction of such engines, specifying the number of wheels and their diameter, the weight of the engine, the weight on the front wheels, the construction of the axles and bearings, and any other particulars bearing upon the question of safety?—These engines have all six wheels. Driving wheels four feet six inches and five feet; leading and carrying wheels three feet six inches and three feet. The bearings are all inside of wheels. The engines are from twelve to fourteen tons' weight. The weight upon the leading wheels is about five tons. This Company's engines have all straight axles, except one which has a cranked shaft; but the Directors have not yet had sufficient experience to determine which is best as regards the question of safety.

3. What are the names of the makers of such engines?—James Stirling for the Dundee Foundry Company, Dundee.

4. What description of engines have the Directors been led by their experience to prefer, and for what reasons?—The Directors have had no experience, except in six-wheel engines.

5. Have the Directors been led by their experience to consider any particular description of engine as peculiarly dangerous, and if so for what reasons?—The Directors have had no experience bearing on this point.

6. Are extra engines ever employed upon the Arbroath and Forfar Railway in propelling trains?—Extra engines are employed, but they are so very rarely.

7. If so, is the extra engine applied in front of the train or behind?—The extra engine is always placed behind the train.

8. Have the Directors been led by their experience to consider the use of an extra engine, either in front or behind, as an additional source of danger?—The Directors have never had reason to consider an extra engine as an additional source of danger, because they never permit an extra engine unless with a heavy train of goods, and going up an incline of 1 in 200 at a moderate speed.

9. Are engines ever allowed to run tender foremost upon the Arbroath and Forfar Railway?—The tenders are now invariably placed behind the engines on this railway.

G. R. Porter, Esq.,
&c. &c.

JOHN MACDONALD, Secretary.

No. 33.
Arbroath and
Forfar.

No. 34.

NEWCASTLE-UPON-TYNE AND CARLISLE RAILWAY.

Appendix.
VI.
Returns relating
to Locomotive
Engines.

No. 34.
Newcastle-upon-
Tyne and Carlisle.

ANSWERS to the Questions sent by the Railway Department, Board of Trade, respecting the Engines employed on the Railway.

Newcastle-upon-Tyne, November 4, 1841.

1. Twenty-six engines are employed.
- 2 and 3. The subjoined list (A.) will give the diameter of the wheels and number. The engines from 1 to 3, weigh nine tons; Nos. 8, 9, 10, and 12, weigh about ten tons, and the remainder, eleven and a half to twelve. The weight on the front wheels of the six-wheeled engines is about two-fifths: it varies in each engine, but it has never been accurately ascertained, the engines running steadily, and the greatest weight being thrown on the driving wheels. All the engines, excepting two and three, have outside frames, under which the guides and boxes are attached to receive the axle ends, the wheels being inside the framework. The form of the axles' ends are as simple as possible, and vary a little in diameter in different engines. The only recommendation that can be offered with respect to safety is, that the axles and tires of wheels should be made of the best materials, and if possible that some enactment should be passed holding the makers of bad articles of that description responsible for the dangers and damages the railway companies sustain by imperfect axles.
4. To the engines with 14-inch cylinders, 18-inch stroke, and six wheels, four of four feet nine inches each, and two of three feet six inches each. The preference is given to this kind of engine because a considerable speed can be maintained and considerable weights carried when required; and it is the best adapted to the Newcastle and Carlisle line. The six wheels are also more safe in the event of breakages about the engine or obstructions on the rail.
5. The engines on the Newcastle and Carlisle Railway are all safe engines, and the Directors have, fortunately for themselves and the public, not had any experience in dangerous engines.
- 6 and 7. Extra engines are sometimes, but not often, employed upon the Newcastle and Carlisle Railway, and almost exclusively on the heavy coal and merchandize trains, (being very seldom used to the passenger trains). It is generally used to propel the train up a part of the line steeper than the rest, and is applied to propel behind the train for the convenience of being disengaged when done with without delaying the train.
8. No injury has ever been sustained on the Newcastle and Carlisle Railway by the use of an extra engine, either in front or behind.
9. No engine is ever allowed to run tender foremost with passengers or merchandize; but the mineral trains sometimes have the tender foremost with empty waggons, but their speed is never great.

(A.)

LIST of LOCOMOTIVE ENGINES on the Newcastle and Carlisle Railway.

No.	Name of Engine.	By whom Built.	Size of Cylinder.	Length of Stroke.	Number of Wheels.	Diameter of Wheels.
			Inches.	Inches.		Feet.
1	Rapid . . .	R. Stephenson and Company .	12	16	4	4
2	Comet . . .	R. and W. Hawthorn . . .	12	16	4	4
3	Meteor . . .	Edward Bury, Liverpool . .	12	16	4	4
4	Hercules . . .	R. Stephenson and Company .	14	18	6	4 of 4 $\frac{1}{2}$, 2 of 3 $\frac{1}{2}$.
5	Samson . . .	R. and W. Hawthorn . . .	14	18	6	4 of 4 $\frac{1}{2}$, 2 of 3 $\frac{1}{2}$.
6	Goliath . . .	Ditto . . .	14	18	6	4
7	Atlas . . .	R. Stephenson and Company .	14	18	6	4
8	Tyne . . .	R. and W. Hawthorn . . .	14	15	4	4 $\frac{1}{2}$
9	Kden . . .	R. Stephenson and Company .	14	15	4	4 $\frac{1}{2}$
10	Lightning . . .	Hawks, Thompson, and Co. .	14	15	4	4 $\frac{1}{2}$
11	Newcastle . . .	R. and W. Hawthorn . . .	14	18	6	4
12	Carlisle . . .	Hawks, Thompson, and Co. .	14	15	4	4 $\frac{1}{2}$
13	Victoria . . .	Ditto . . .	14	18	6	4 of 5, 2 of 3 $\frac{1}{2}$.
14	Wellington . . .	R. and W. Hawthorn . . .	14	18	6	4 of 5, 2 of 3 $\frac{1}{2}$.
15	Nelson . . .	Ditto . . .	14	18	6	4 of 5, 2 of 3 $\frac{1}{2}$.
16	Northumberland . . .	Ditto . . .	14	18	6	4 of 5, 2 of 3 $\frac{1}{2}$.
17	Cumberland . . .	Ditto . . .	14	18	6	4 of 5, 2 of 3 $\frac{1}{2}$.
18	Durham . . .	Ditto . . .	14	18	6	4
19	Matthew Plummer . . .	Thompson, Brothers . . .	14	18	6	4
20	Adelaide . . .	Ditto . . .	14	18	6	4
21	Sun . . .	R. and W. Hawthorn . . .	14	18	6	4 of 4 ft. 9 in., 2 of 3 $\frac{1}{2}$ ft.
22	Star . . .	Ditto . . .	14	18	6	4 of 4 ft. 9 in., 2 of 3 $\frac{1}{2}$ ft.
23	Mars . . .	Thompson, Brothers . . .	14	18	6	4
24	Jupiter . . .	Ditto . . .	14	18	6	4 of 4 ft. 9 in., 2 of 3 $\frac{1}{2}$ ft.
25	Venus . . .	Ditto . . .	14	18	6	4 of 4 ft. 9 in., 2 of 3 $\frac{1}{2}$ ft.
26	Saturn . . .	Ditto . . .	14	18	6	4 $\frac{1}{2}$

JOHN ADAMSON, Secretary to the Directors.

No. 35.

HULL AND SELBY RAILWAY.

ANSWERS to the Questions proposed by the Railway Department of the Board of Trade, London, in a letter from S. LAING, Esq., to the Secretary of the Hull and Selby Railway Company.

Railway Office, Hull, November 9, 1841.

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VI.

Returns relating
to Locomotive
Engines.

No. 35.

Hull and Selby.

1. What number of engines are employed upon the Hull and Selby Railway?—We have twelve six-wheeled locomotive engines on this railway at present, and two others nearly completed, also having six wheels, which will be coupled.

2. What is the construction of such engines, specifying the number of wheels and their diameter, the weight of the engine, the weight on the front wheels, the construction of the axles and bearings, and any other particulars bearing upon the question of safety?—Six of the engines have outside framing round the entire engines; the front and hind wheels are three feet and a half, and the driving wheels on the crank axle are five feet and a half in diameter; the engines are made with an apparatus for lifting the hind wheels from the rails, but this is never used with a passenger train, and very rarely with a goods' train; their weight is supported by bearings outside the wheels. Each engine weighs fourteen tons and three quarters when in proper working order, including the fuel and water; the front wheels carrying about four tons and three quarters when the six wheels bear upon the rails, but only two tons and three quarters when they are upon four wheels. In the event of any casualty with the front or hind pair of wheels and axles, there are flanges on the whole of the engine wheels, although it is only on the wheels of the engines just described that it is necessary to have them on the large wheels when the hinder pair are lifted up from the rails. The other six engines have also an outside frame round them; their front and hind wheels are also three feet and a half, but those on the crank axle are six feet in diameter; their weight is also supported by bearings outside the wheels on the front and hind axles, but upon bearings inside the wheels on the crank axle. These engines weigh fifteen tons and a quarter each, with fuel and water in proper working order, the front wheels always carrying six tons and a quarter; they have also outside journals on the crank shaft to preserve its parallelism in the event of any failure in the crank, but there is no weight upon them.

3. What are the names of the makers of such engines?—The class of engines first referred to were made by Messrs. Fenton, Murray, and Jackson, of Leeds; and the latter, from the plans of our locomotive superintendent, by Messrs. Shepherd and Todd, of Leeds.

4. What description of engines have the Directors been led by their experience to prefer, and for what reasons?—The last class of engines are preferred; they differ considerably in their arrangements from the former, and the construction is deemed to be the best for securing safety and efficiency; they combine the principal advantages of the London and Birmingham Railway engines with those of the common six-wheeled engines, the former being made on the plan formerly called the "Inside System," the weight resting on inside bearings to distinguish them from the class of engines having their bearings outside the wheels and called the "Outside System." Our new engines have only two inside stay frames and bearings to the crank shaft, previous experience having proved the "Inside System" more favourable to the durability of railway axles generally, and a greater safeguard against the accidents which (we are informed) have occasionally attended the failure of the crank axle, both in four and six-wheeled engines when upon the "Outside System, although the cranks had only been a short time at work; they even gave way when a portion of the weight was supported upon inside bearings, and when the axles were soundly made, whilst their breakage was of very rare occurrence where the entire weight on the crank was supported within the wheels as in "Bury's Engines;" and, in consequence of which, (as far as the crank is concerned,) they can work with about three-quarters of an inch less diameter with greater safety. But to avoid the pitching and serpentine motion which always arise when the axles are only about five feet and a half from each other, our front and hind axles are therefore eleven feet asunder, so that the amount of play in wheels has less effect in deranging the parallelism of the engine with the railway, whilst the front and hind springs, being at double the distance, have an ample command over the pitching motions of the engine, which are in consequence reduced to a mere trifle. The old "Inside System" of bearings is equally well known to cause the rocking motion of that class of engines, from the cross distance of all their springs being only about three feet eight inches; we, therefore, project the front and hind axles to a width of six feet and a half for the action of the springs: hence the proportionate breadth and length indispensable to their ease and safety are fully obtained, that property is more especially required when violent actions take place through the slipping of the engine wheels. However, with such a foundation as we have for the stability of the engine and the wheels balanced, we consider them free from dangerous motions under any sort of slipping and at any speed of travelling. These engines have also an arrangement of gearing for working the steam expansively; and while the diminished consumption of fuel requires less attention, there are fewer interruptions to a good look-out, and the consequent greater durability of the boiler subjects them to less risk of delay from that quarter. The tubes are made of sheet-iron, and not one has been burst in those engines up to the present time.

5. Have the Directors been led by their experience to consider any particular description of engine as peculiarly dangerous, and if so, for what reason?—A very little experience has led us to consider that there are certain constructions of engines peculiarly dangerous, if run beyond a limited speed. The engines we first described were prepared (as previously stated) to have their hind wheels lifted when a deficiency of adhesion might be experienced; but by

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thus making them into a short four-wheeled engine, the pitching and serpentine motion are so very much increased that we do not consider it prudent to work them on four wheels, except when at a very slow speed, for we neither consider them safe or economical at our usual speed with passengers. With such trains we, of course, never attempt it, and but rarely with any others, such being the opinion entertained. Four-wheeled engines having the protection of outside bearings against a rocking motion, a still less favourable opinion would have been entertained of them if they were constructed with inside bearings.

6. Are extra engines ever employed upon the Hull and Selby Railway in propelling trains?—We have extra engines almost every day with our goods' trains, and occasionally with passenger trains.

7. If so, is the extra engine applied in front of the train or behind?—The extra engines are placed in front of the train; but when part of the load is going through, and the remainder for the different stations, the train is occasionally separated, one engine taking the former, and another the latter part of the load; but when all are going through we send both engines in front.

8. Have the Directors by their experience been led to consider the use of an extra engine, either in front or behind, as an additional source of danger?—An extra engine in front is not considered to be an additional source of danger; but it is not deemed safe to employ one to push a train behind, unless the speed be very moderate. We also find large trains to move much steadier under the heavier pull of two engines than they do when each takes a separate portion of the train, and it is not uncommon with moderate loads for the momentum of the reciprocating machinery to affect the regular pulling of the engine at every revolution of the driving wheels; and, for a similar reason, the lighter pull on the last carriages generally makes them more uneasy than those nearer the engine.

The engine-drivers have never misunderstood each other when two or three engines have been together, whistling, or other signals being used; and in the event of any casualty taking place there is a stronger force at hand, either for steam power or manual assistance. Should any of the enginemmen be so stupid as to disregard a signal to stop, we consider they could do the same if alone with a separate portion of the train, and they would then be more likely to do mischief than when under the control of the brake and steam of an accompanying engine; hence, we have no apprehensions of danger from an extra engine being placed in front of a train, but rather the reverse.

It is impossible always to avoid pushing when about the stations, and occasionally in short trips on the main line; but from its awkwardness we never exceed a very moderate speed to ensure safety, and it is very rarely practised.

9. Are engines ever allowed to run tender foremost upon the Hull and Selby Railway?—We occasionally run our engines tender foremost in one direction on short trips; our tender's axles, however, are four inches diameter in the middle, and four inches and a half diameter through the wheels. Moreover, the principle of an enlarged base is also applied to the tender, which secures their steady motion whether the engine or tender be foremost; but, notwithstanding this, we constantly turn them at Hull and at Selby, and pull under all practicable circumstances.

GEORGE LOCKING, Secretary.

No. 36.

CLARENCE RAILWAY.

No. 36.
Clarence.

QUESTIONS put by the Board of Trade.

1. WHAT number of engines are employed upon the Clarence Railway?—Thirteen by the Company, and three by the lessee of the coach department; besides engines belonging to the Stockton and Hartlepool Company, to whom we beg to refer the Board for information.

2. What is the construction of such engines, specifying the number of wheels and their diameter, the weight of the engine; the weight on the front wheels; the construction of the axles and bearings, and any other particulars bearing upon the question of safety?—The 13 engines belonging to the Company are adapted for, and used in coal hauling, and their rate of travelling is limited to eight miles an hour; they all have their cylinders outside the crank axles, driven by means of cranks on the wheels. Wheels overhang the bearings, which are generally cast iron, embracing 12 inches each of the axle.

Number of Engine.	Number of Wheels.	Diameter.	Weight of Engine.	Weight on front wheel.	Position of Cy- linder.	Makers' Names.
		ft. in.	Tons.	Tons.		
1	6	4 0	12	4	Vertical . . .	T. Hackworth and Co.
2	4	4 0	9	4½	Oblique . . .	Ditto.
3	4	4 0	10	5	Ditto . . .	Ditto.
4	6	4 0	12	5	Ditto . . .	Ditto.
5	6	4 0	12	4	Vertical . . .	Neshaw and Welsh.
6	6	4 0	12½	4	Ditto . . .	W. Lister.
7	6	4 0	12½	4½	Horizontal . .	T. Hackworth and Co.
8	6	4 0	11	4	Vertical . . .	Kitching and Co.
9	6	4 0	12	4	Oblique . . .	T. Hackworth and Co.
10	6	4 0	12	4	Ditto . . .	Ditto.
11	4	5 0	9	4½	Horizontal . .	Braithwaite and Co.
13	6	4 0	12	4	Oblique . . .	T. Hackworth and Co.

Particulars of 2 Engines belonging to the Lessee of the Coaching Department, and one let to him by the Company; bought of Greenwich Railway Company.

Thames (12) Com- pany's engine.	4	5 6	7	4	Horizontal.	
Victoria. . . .	4	4 6	9	Equal	Vertical. . .	W. Lister.
Norton	4	4 0	12	Ditto	Slightly oblique	Hawthorn and Co.

The Norton has crank axle, inside bearings, and 4 wheels coupled.

3. What are the names of the makers of such engines?—*Vide* answer No. 2.
4. What description of engines have the Directors been led by their experience to prefer, and for what reasons?—The Company has used the common coal engine, with returned tube, and have not turned their attention to the kind of engine used in rapid travelling.
5. Have the Directors been led by their experience to consider any particular description of engine peculiarly dangerous, and if so, for what reason?—Answered by No. 4.
6. Are any extra engines ever employed upon the Clarence Railway in propelling trains?—No.
7. If so, is the extra engine applied in front of the train or behind?—*Vide* No. 6.
8. Have the Directors been led by their experience to consider the use of an extra engine, either in front or behind, as an additional source of danger?—They have never incurred the risk, but should consider it highly dangerous, under either mode, but more so at propelling than drawing.
9. Are engines ever allowed to run tender foremost upon the Clarence Railway?—The Company's engines, all of which are employed in hauling coals, have (with two exceptions stated below) two tenders, one with fuel and one with water; consequently there is always one in front.
- The exception is as regards 2 and 3; these being light engines on four wheels have only one tender; therefore, as they are not turned, they go one journey with tender in front, and one with it in the rear.

No. 37.

PRESTON AND WYRE RAILWAY.

No. 37.

Preston and Wyro.

SIR,

Fleetwood, November 11, 1841.

YOUR letter of the 11th October, containing various questions concerning the respective merits of four and six-wheel engines, &c., was sent to me for reply by the Directors, and I should have sent you the required information some time ago, had I not waited for the result of some trials we have been making on the subject. I will reply to your questions seriatim as they are put in your letter.

1. We have only two engines employed (constantly at work) on this railway—one large six-wheel engine for the goods traffic, and one small four-wheel engine for ballasting, light goods, and extra trains; our passenger train engines being hired from the North Union Railway.

2, 3. The six-wheel engine has wheels of five feet diameter, and weighs 17 tons. The weight on the front wheels is six tons. It is constructed on the same principles as those of the North-Eastern Railway, and Manchester and Leeds. It was made by Messrs. C. Tayleure and Co., Vulcan Foundry, near Warrington,

The four-wheel engine is fitted with wheels of four and a half feet diameter. The total weight is eight and a half tons, and three and a half tons on the front wheels. The axles are four and a quarter inches in diameter, and it has an iron frame. Makers, Messrs. Forrester and Co. Vauxhall Foundry, Liverpool.

4, 5. The six-wheel engine is thought to wear and disturb the rails and line generally much less than the several four-wheel which are also used upon this railway. The former is found to go more steadily, and to occasion less sinking and disturbance when any part of the line becomes a little soft from continued wet weather; although the six-wheel engine is much larger, heavier, and more powerful (being a thirteen-inch cylinder) than the four-wheel, which have only cylinders of ten, eleven, or twelve inches diameter. Increased safety would be sure to follow from the foregoing properties of the six-wheel engines.

I must, however, add, that this is the opinion only of the officers and servants of this Company, and that the drivers of the engines which we hire from the North Union Railway Company are of the contrary opinion as far as the injury to the rails, shaking and disturbing soft places, &c. The only inconvenience, or greater danger, which we find from six-wheel engines, is

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their tendency to get off the line in going round very sharp curves, and in some of such curves (in stations and sidings,) the six-wheel engines cannot go at all, while our small four-wheel engine does so without difficulty But I have recently seen upon another railway a very successful mode of obviating this, where the two middle wheels are flanged, which our's are not. It is by giving a play of one or two inches to the front wheels, which is said to enable the engine to go round the sharpest curves without ever getting off the line.

6, 7, 8. An extra engine has not been used more than three or four times upon this railway, and I think it was once or twice in front of the train, and on the other occasions behind, as the extra engine happened to be placed, opinions being so divided as to which was the best mode of using it. There can be no doubt, however, of the increased necessity for care, and of the greater danger in case of carelessness or of any mishap, in using an additional engine instead of only one for each train.

9. The engine-drivers are strictly forbidden to run tender foremost, but they have sometimes been detected in doing so, to save the trouble and delay of turning their engines before returning, when rather pressed for time.

I am, &c.,
JOHN POWER, Secretary.

S. Laing, Esq.,
&c. &c.

No. 38.
Brandling
Junction.

No. 38.
BRANDLING JUNCTION RAILWAY.
ANSWER to Queries by Board of Trade.

November 19, 1841.

1. Ten engines.
2 and 3. The following table will give the answer to these queries in a tabular form:—

Nos.	Name of Engine.	By whom Built.	Diameter of Cylinder.	Length of Stroke.	Number of Wheels.	Diameter of Wheels.	Diameter of Axles.	Weight of Engine.	Weight on		
									Front Wheels.	Middle Wheels.	Back Wheels.
							Outside Journals. Inches.	Tons.	Tons.	Tons.	Tons.
1	Wear . . .	Messrs. Hawthorn	14	18	6	{ 2 front, 4 feet ; 4 back, 5 feet. }	3½	15	7	6	2
2	Tyne . . .	Ditto	14	18	6	Ditto.	3½	15	7	6	2
3	Mountain . .	Ditto	14	18	6	{ 4 front, 4½ feet ; 2 back, 3½ feet. }	3½	15	7	6	2
4	Wellington . .	Ditto	14	18	6	Ditto.	3½	15	7	6	2
5	Newcastle . .	Messrs. Longridge and Co. . .	12	18	6	{ 2 front & 2 back, 3½ feet ; middle, 5 feet. }	3½	13	6	5	2
6	Sunderland . .	Ditto	12½	18	6	Ditto.	3½	13	6	5	2
7	Shields . . .	Messrs. Hawthorn	14	18	6	6 wheels, 4 feet	3½	16	7	6	3
8	Nelson . . .	Ditto	14	18	6	Ditto.	3½	16	7	6	3
9	Brandling . .	Messrs. Longridge and Co. . .	14	18	6	Ditto.	3½	17	8	7	2
10	Gateshead . .	Ditto	14	18	6	6 wheels, 4½ feet.	3½	17	8	7	2

Being all six-wheel engines, they are considered much safer than engines with four wheels, as in case of an axle breaking the remaining four wheels support the engine. Every care is taken to ensure good materials in the construction.

4. What description of engines have the Directors been led by their experience to prefer, and for what reasons?—The Directors have been led to prefer engines with six wheels in preference to those with four wheels, on account of their greater steadiness in travelling, and being otherwise more safe, as previously explained.

5. Have the Directors been led by their experience to consider any particular description of engine as peculiarly dangerous, and if so, for what reasons?—The Directors can only answer this question comparatively; they consider engines with six wheels more safe than engines with four wheels.

6. Are extra engines ever employed upon the Brandling Junction Railway in propelling trains?

7. If so, is the extra engine applied in front of the train, or behind?

Answer to 6 and 7. No extra engines are ever used on the Brandling Junction Railway. The engines being very powerful and the wheels not of large diameter, they are capable of taking the trains in all states of the weather, except on extraordinary occasions, in which latter case the still more powerful engines, No. 7, 8, 9, and 10, are employed, which having small wheels, are capable of taking any weight of trains required.

8. Have the Directors been led by their experience to consider the use of an extra engine, either in front or behind, as an additional source of danger?—The Directors prefer employing engines of additional power in extraordinary cases to employing extra engines, consequently the latter mode is not resorted to.

9. Are engines ever allowed to run tender foremost upon the Brandling Junction Railway? —Upon a short branch of three miles an engine runs with the tender forward down the descending line of direction; but the rate of speed is restricted to 15 miles per hour. And no tendency has ever been observed of the tender appearing to run off the rails.

JOHN REWCASTLE, Clerk to the Company.

No. 39.

LONDON AND BIRMINGHAM RAILWAY.

REPLIES to Circular of the 11th October, relative to Locomotive Engines, &c.

1. What number of engines are employed upon the London and Birmingham Railway?—
In the whole 90, viz. :—

42 with cylinders twelve inches in diameter.

18 with cylinders thirteen inches in diameter.

—
60 for the passenger traffic.

30 with cylinders thirteen inches diameter for the goods traffic.

—
90

The engines are used indifferently for both descriptions of traffic when the exigencies of the service require it.

2. What is the construction of such engines? specifying the number of wheels and their diameter; the weight of the engine; the weight on the front wheels; the construction of the axles and bearings, and any other particulars bearing upon the question of safety?—The construction of the engine is as follows;—The engines are all on four wheels, the passenger engines have one pair, (viz. the driving wheels) five feet six inches diameter, the other pair (viz. front wheels) four feet diameter, and the framing and journals are inside the wheels.

	Tons.	Cwt.	Qrs.
The total weight, water and fire included, of the smaller passenger engine, or with cylinders twelve inches diameter is	9	15	
On the driving wheels	5	18	
On the front wheels	3	17	
The total weight of the larger, or 13-inch cylinder, passenger engine with water and fuel included is	11	10	
On the driving wheels	6	11	
On the front wheels	4	19	
The engines for the goods traffic have both pairs of wheels five feet in diameter and coupled. The total weight of these engines with water and fuel, is	11	13	1
One the crank wheels	6	10	3
On the front wheels	5	2	2

3. What are the names of the makers of such engines?—The engines have been all made to drawings furnished by the Company to the following manufacturers :—

Messrs. Maudslay, Sons, and Field.

Messrs. Peter Rothwell and Co.

Messrs. Benjamin Hick and Co.

The Haigh Foundry Company.

Messrs. Mather, Dixon and Co.

Messrs. R. and W. Hawthorn.

Mr. Edward Bury.

4. What description of engines have the Directors been led by their experience to prefer? and for what reason?—The Directors, after maturely considering the description of engine which it would be most advisable to use on the London and Birmingham Railway, were led to prefer that which is known as "Bury's four-wheeled engine," and which (with the exception of one of six wheels) has been alone used upon the line since its opening.

The arguments adduced by Mr. Bury in support of this preference (so far as regards the important question of safety) and which guided the Directors in a decision which an extended experience has given them the highest reason to be satisfied with, are subjoined in Mr. Bury's own words.

"There is nothing in the construction of a locomotive engine which has so great a tendency to secure its safety and stability, and consequent exemption from derangement and repairs, as the firm connexion of all the parts by a strong and well arranged framing, so that they shall retain their relative positions when the engine is in motion, and that it shall receive and bear the strain and the concussion to which every part is subject. The inside framing possesses a great superiority in this respect over the outside framing, as it forms a stronger and more direct connexion between the cylinder, the cranked axle, and all the moving parts, and it bears all the strain of the engine without throwing any portion of it on the boiler, as is the case with the outside framing,

"These advantages are best described by comparing it with the ordinary outside framing when submitted to the principal strains which it has to resist.

"The most important is that caused by the whole power of the engine acting as a direct strain upon the crank as it passes over either centre. With the inside framing the centre line of the connecting rod is only ten inches distant from the centre line of the frame, and the total distance between the bearings is forty-three inches and a half; but where the framing is outside the wheels, these dimensions are necessarily twenty inches, and seventy-two inches respectively, and the effect of the strain on the crank in this case would be to its effect with the inside framing as fourteen is to eight. For this reason, when the principal frame is placed outside the wheels it becomes necessary to have an additional inside framing to prevent the fracture of the axle, these additional inside frames not only cause an increase of friction on the bearings of the cranked axle, but also throw a considerable strain on the boiler, which then becomes the medium of connexion between the inside and outside frames, the inside frames

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London and
Birmingham.

being fixed at one end to the bottom of the smoke box, and at the other end to the fire-box, while the principal frame is attached by long brackets to the body of the boiler.

"Another important feature is the strain to which locomotive engines are liable from the pressing or striking of the flanges of the wheels against the rail when travelling on a curve. In engines with the bearings inside the wheels, the weight of the boiler has a tendency to bend the axle down in the centre, while the pressure of the flange against the rail acts upon it in a contrary direction, and thus one strain counteracts the effect of the other. If the bearing is outside the wheel, the weight of the boiler tends to bend the axle upwards, and a strain on the flange of the wheel acts in the same direction, and in addition to it. The position of the bearing inside the wheels is of great practical advantage in case of the fracture of the cranked axle, as the weight on the bearings presses the flange of the wheel against the rails, and assists the length of the journal in keeping it from being thrown off the rails. In the few instances which have occurred on the London and Birmingham Railway, when an axle has broken, not only have the wheels remained on the rails, but the driver has been enabled to proceed with the train to the nearest station. The use of six wheels originated in the necessity of supporting the large and heavy fire-box of the engine, which was not sufficiently balanced by the smoke-box end; no such necessity exists in the locomotives of the London and Birmingham Railway, as the weight is nearly equally distributed on the front and hind wheels, and not only would two additional wheels be useless, but they would be prejudicial, especially when engines are travelling upon curves. A four-wheeled engine travelling upon a curve is driven by the direct application of the moving power towards the outside of the curve, but as the wheels are rather conical, the larger diameter of the cone will ride on the outside rail while the smaller diameter of the opposite wheel will bear on the inside rail, and this difference (as the outside rail is longer than the inside one) will allow both the wheels to revolve without slipping or grinding.

"With an engine upon six wheels if the two leading wheels assume this position the others would necessarily be dragged after them, but what is of still more importance, the angle which the centre line of the locomotive forms with the tangent of the curve in which it is caused to move, is much greater with six wheels than with four, so that the flange presses more against the rail with the former than with the latter engine. The pressure against the outside rail, arising from this cause will be in direct proportion to the distance between the front and hind axle of either engine, so that it will be nearly as ten to six. This pressure, and consequent friction is further increased by the action of the middle wheel, which has a tendency to ride on the same curve as the front and hind wheels, but is prevented from doing so by being in a straight line between the two, and is thus forced to move laterally between the chord and the circumference of the curve. The four-wheeled engine is consequently subject to much less friction than the six-wheeled engine when travelling on curves, and hence it has less tendency to be thrown off the rails."

5. Have the Directors been led by their experience to consider any particular description of engine as peculiarly dangerous, and if so for what reasons?—The distance passed over by the engines of the London and Birmingham Railway up to this period, is upwards of three millions of miles, and the very few accidents that have occurred to engines have, with one single exception, arisen from collision or from getting off the line when the points which were then, but are no longer in use, had been left wrong. The one exception referred to occurred soon after the opening of the line in 1837, and is supposed to have arisen from the train having been driven at too great velocity over a portion of unsound ground. But no such accident has subsequently occurred.

6. Are extra engines ever employed upon the London and Birmingham Railway?—Frequently.

7. If so, is the extra engine applied in front of the train, or behind?—The rule is, for the extra engine to be applied in front.

8. Have the Directors been led by their experience to consider the use of an extra engine either in front or behind, as an additional source of danger?—No accident has ever resulted from having two or more engines in the front of any train. It is considered that more danger arises from trains being out of time than from any other cause. Hence assistant engines by placing trains so circumstanced in their proper place relatively to succeeding trains, are essentially necessary for the prevention of accidents.

9. Are engines ever allowed to run tender foremost on the London and Birmingham Railway?—Only when very peculiar circumstances make the exception to a general rule unavoidable.

By Order,

R. CREED, Secretary.

No. 40.

LONDON AND BRIGHTON RAILWAY.

No. 40.
London and
Brighton.

SIR,

10, Angel Court, Throgmorton Street, November 23, 1841.

I HAVE the honour to forward, as requested by the Lords of the Committee of Privy Council, the following answers to the queries contained in your favour of the 11th ult., and which the Directors hope may prove satisfactory.

Replies to the three first questions are contained in the following table :—

Names of the Makers.	Number of Engines made by each Maker.	Diameter of the Cylinder.	Length of the Stroke.	Description of the Axles of the Driving Wheels and Bearings.	Diameter of the Front Wheels.	Diameter of the Driving Wheels.	Diameter of the Hind Wheels.	Weight on the Front Wheels.	Weight on the Driving Wheels.	Weight on the Hind Wheels.	Total Weight of Engine with Coke and Water.
	In.	In.	In.		ft.	ft.	ft.	T. cwt. qrs. lbs.	T. cwt. qrs. lbs.	T. cwt. qrs. lbs.	T. cwt. qrs. lbs.
Messrs. Turner, Jones, and Evans	1	13	18	{ Double cranked axle, out-side bearing	3½	5½	3½	4 7 0 0	5 18 3 0	2 17 0 0	13 2 3 0
	1	13	18	{ Double cranked axle, in-side bearing	5	5	3½	4 10 0 0	6 10 3 0	2 9 1 0	13 10 0 0
Messrs. G. & J. Rennie.	2	14	18	{ Double cranked axle, out-side bearing	3½	5½	3½	5 0 0 0	8 0 0 0	2 19 0 0	15 18 0 0
Messrs. Sharp, Roberts, and Co.	1	12	18	{ Ditto ditto ditto	3½	5½	3½	This is a ballast engine, the weight of which has not been obtained.			
	13	14	18	{ Ditto ditto ditto	3½	5½	3½	5 5 0 0	8 9 0 0	1 5 0 0	14 19 0 0
Mr. E. Bury	6	14	18	{ Double cranked axle, in-side bearing	4	5½	none	5 13 0 0	8 16 0 0	none	14 9 0 0
Mr. Fairbairn	1	14	18	{ Double cranked axle, out-side bearing	3½	5½	3½	4 16 0 0	8 17 0 0	2 5 0 0	15 18 0 0

It will be seen from the above table that the present stock of locomotive engines on the line are 25
 Two more engines, with 14-inch cylinders, 18-inch stroke, 5½ feet driving wheels, are ordered from Messrs Sharp and Co. 2
 Three more of same size from Mr. Fairbairn 3
 One from Messrs. G. and J. Rennie of same size 1
 ————
 31

Appendix.
 VI.
 Reports relating to Locomotive Engines.
 No. 40.
 London and Brighton.

This will be the stock of engines in January, 1842.

The weight of all the engines have been furnished by the makers, as the Company have not at present a weighing machine capable of weighing so great a weight.

To queries 4 and 5. The experience which the Directors have had of the working of the above engines has been too limited to enable them to form a decided opinion of their respective merits. The alarm occasioned in the public mind at Brighton by the lamentable accident which occurred within a few days after the entire opening of the line, directed as it was by the verdict of the coroner's jury to the four-wheeled engines then in use, made it imperative on them to discontinue at once the use of the latter in deference to the feelings so excited. They beg distinctly to state that the resolution so adopted was solely on this ground, and not from any conviction they entertained of the danger of using four-wheeled engines, which they are aware have been some time in use on other railways, and the safety of which they have no ground for impugning.

To queries 6, 7, and 8. Extra engines are frequently used on the London and Brighton Railway. The plan adopted is to place the assistant engine in front of the train, which they consider in general the safest mode when there is little or no ascent; but on the incline near New Cross, where the gradient is considerable, viz., about 1 in 100, they are of opinion the assistant engine may be used with perfect safety to propel the train, which is the mode adopted in this instance as being, under the circumstances, the most convenient. They regard the system of using two engines for a heavy train as safer than dividing the train into two portions.

To query 9. The engines are not used tender foremost on the London and Brighton Railway, except under particular circumstances.

S. Laing, Esq.
 &c. &c.

I have, &c.
 THOS. WOOD, Secretary.

No. 41.

GLASGOW, PAISLEY, AND GREENOCK RAILWAY.

MEMORANDUM in reply to the letter of the Board of Trade of the 11th October, 1841.

Greenock, October 27, 1841.

No. 41.
 Glasgow, Paisley, and Greenock.

1. There are 12 engines employed on this railway.

2. These engines are all on six wheels; the diameter of the leading and trailing wheels is three feet six inches, and of the driving wheels five feet. The average weight of these engines is twelve tons; the weight on the front wheels is from two to three tons. The construction of the axles and bearings is as follows:—The diameter of the crank axle at the bearings is three inches and a half by five inches, and a half in length; diameter at the centre five inches and a quarter; the diameters of the leading and trailing axles at the bearings three inches and a half by five inches and a half long; at the centre four inches and a quarter.

No axle has been broken or strained, nor has there been any approach to accident from the construction of the engines. They run with great steadiness and take sharp curves very easily.

3. The following is a list of the engines, with the makers' names:—

Appendix.
VI.
Returns relating
to Locomotive
Engines.
No. 41.
Glasgow, Paisley,
and Greenock.

No. 1	" Lucifer"	}	Messrs. Peter Rothwell and Co., Bolton-le-Moors.
" 2	" Hecate"		
" 3	" Zamiel"		
" 4	" Eagle"		
" 5	" Falcon"	}	Messrs. Sharp and Roberts, Manchester.
" 6	" Petrel"		
" 7	" Curlew"		
" 8	" Hawk"		
" 9	" Witch"	}	Messrs. Barr and Macnab, Paisley.
" 10	" Phantom"		
" 11	" Greenock"	}	Messrs. Charles Tayleure and Co., Vulcan Foundry, Warrington.
" 12	" Glasgow"		

4. Of these engines, by far the most efficient are the four made by Messrs. Sharp and Roberts. They have run altogether now 61,281 miles without any accident, and scarcely a detention, running the 22½ miles with some of the trains, including four stoppages, frequently in 55 minutes. The Directors have no experience of four-wheeled engines, but their engineer, who has recently travelled on most of the English lines, prefers the six-wheeled engine; and they have no intention, therefore, of changing their present style of engine.

5. Answered in No. 4.

6. Extra engines are employed occasionally in propelling trains.

7. The extra engine is always employed in front, except when from slipping, or stormy weather, the assistance is found to be required after the train has started. Coupled engines are the rule; the power applied behind the exception. Indeed, it has only twice been resorted to.

8. The Directors have no reason to regard the use of an extra engine, either before or behind, as an additional source of danger when properly managed; and to secure this the superintendent himself, or frequently the engineer, accompanies the extra engine.

They consider that the caution demanded from the fireman in rule No. 1, as to his attention to signals, is of great advantage. The rule No. 6 also is of service, but especially the latter part of rule 16. The Directors consider that, when from want of power, slipping on the rails, or other causes, a train is retarded or likely to be retarded, it is far less dangerous to apply the extra power either before or behind, than to have the train out of time.

9. Engines are never allowed to leave the terminal stations tender first; but they are of necessity allowed to return tender first after assisting a train.

We are, &c.

J. E. ERRINGTON, Manager.
WYNDHAM HARDING, Secretary.

S. Laing, Esq.
&c. &c.

No. 42.

No. 42.
London and
Greenwich.

LONDON AND GREENWICH RAILWAY.

SIR,

London Terminus, November 30, 1841.

I AM instructed by the Directors of this Company to forward to you the following replies to the questions contained in your letter of the 11th of October last, and to express the willingness of the Directors at all times to communicate with the Board of Trade on any matter tending to the safety of the public.

Nos. 1, 2, 3.

No. of Engine.	Name of Maker.	Number of Wheels.	Diameter of Wheels.			Total Weight. About	Weight on Front Wheels. About	Bearings.
			Front.	Driving.	Trailing.			
			Ft. In.	Ft. In.	Ft. In.	Tons.	Tons.	
1	Marshall and Co., Walsall	4	3 9	5 0	..	9	3½	Outside.
2	Ditto	4	3 9	4 0	..	9	3½	Ditto.
3	Ditto	6	3 6	5 0	3 6	10½	3½	Ditto.
4	Ditto	4	3 9	5 0	..	9	3½	Ditto.
5	Forrester and Co.. . .	6	4 0	5 0	3 0	11½	4½	Ditto.
6	Ditto	4	4 0	5 0	..	11½	4½	Ditto.
7	Summers and Co.. . .	6	3 6	5 0	3 6	11	3½	Outside and inside.
8	Hawthorn	6	4 0	5 6	4 0	12	4	Ditto.
9	Robert Stephenson . .	6	4 0	6 0	4 0	12½	4	Ditto.

4 and 5. The Directors have not been led by their experience to give a universal preference to any description of engine, which must vary with different circumstances; and they find different sorts adapted to a varying traffic such as they have to provide for. At first they had only the smaller engines, which are sufficiently powerful for the daily working of their line; but they found it necessary to have the larger ones for the Sunday and holiday traffic. They have had both four-wheel and six-wheel engines in constant use for five several years, and they are happy to say that though they have conveyed nearly 200,000 trains of passengers along their railway, they have had no accident to the life or limb of any passenger; and they have never had any engine on their line which they consider at all dangerous.

6, 7, and 8. Assistant-engines are not used on the London and Greenwich Railway. When there is a large influx of passengers additional trains are started at shorter intervals,

which is the most convenient and a perfectly safe mode, as there is no chance of one train coming up with another.

9. Engines are, and always have been, daily used, tender foremost, on the London and Greenwich Railway, and without experiencing any objection on the ground of safety; but the Directors are providing the means for turning the engine and tender at the end of each journey, which they have already the means of doing at Greenwich; and will have at London so soon as their new station is built, as they find passengers do not like to be nearer the engine than is unavoidable.

I have, &c.

J. T. AKERMAN, Secretary.

Appendix.

VI.

Returns relating
to Locomotive
Engines.

No. 42.

London and
Greenwich.

No. 43.

GREAT WESTERN RAILWAY.

SIR,

Princes Street, Bank, December 9, 1841.

I AM desired by the Board of Directors of this Company to acquaint you, in reply to your circular letter of the 11th October last, that they have given their best attention to the subject, and herewith transmit the required information for the Lords of the Committee of Privy Council for Trade.

There are about eighty-six locomotive engines in use by this Company, of these all are six-wheeled engines, and all except five have outside frames or bearings outside the wheels. The crank axles have also bearings, and supporting springs inside the wheels; the total weights of the engines vary from seventeen to twenty-one tons, of this about eight tons are on the pair of driving-wheels, and the rest nearly equally divided on the leading and trailing-wheels; the driving-wheels are therefore nearly under the centre of gravity of the whole, and the others are about equal distances, and as much as 13·6, apart rendering the engines very steady at the highest speeds.

The diameters of the driving-wheels vary from five to seven feet, and of the small wheels from three feet six to four feet.

The makers of these engines are—

Messrs. Stephens and Co., Newcastle.
Messrs. Fenton, Murray, and Jackson, Leeds.
Messrs. Hawthorn, Newcastle.
Messrs. Sharp, Roberts, and Co., Manchester.
Messrs. Jones, Turner, and Evans, Newton.
Messrs. Nasmyth, Gaskell, and Co., Manchester.
Messrs. Tayleure and Co., Warrington.
Messrs. Mather, Dixon, and Co., Liverpool.
Messrs. Rothwell and Co.
The Haigh Foundry Company, Wigan.
Messrs. Rennie and Co., London.
Messrs. Stothert and Co., Bristol.

No other description of engines has been used upon this line than those referred to above; the results of the experience gained by the working of these engines appears to be that with three pair of wheels nearly equally loaded the strain upon the axles is much more equal and constant than with two pair; that the probability of fracture is diminished, and the consequences of such fracture much less serious, while the steadiness and stability of engines upon six wheels with the weight distributed over a considerable length and breadth of base adds very much to the safety of the trains; that in the event of any violent concussion or stoppage they are less easily thrown off the line, and consequently less likely to cause injury to the carriages; and when followed by a six-wheeled tender, on which plan nearly all the tenders on the Great Western Railway are constructed, there is very little probability of any damage being done even to the front carriage or waggon in the worst cases of accident.

Extra engines are occasionally used with the trains, and always in ascending the inclined plane at Box.

The extra engine is applied in front, when intended to go on the whole journey or any considerable distance with the train; otherwise it is applied before or behind, as circumstances may render most convenient; at the inclined plane it is generally applied behind. As a general rule engines are not allowed to be run tender foremost, except on the four miles of branch of the Cirencester and Swindon line, and where the tenders are provided with guards similar to those of the engines.

Circumstances will occur, and there are cases in which the engines cannot be turned, but with the long six-wheeled tenders used on this line no inconvenience has been felt.

In conclusion, I beg to say that the Directors have not from their experience been led to conclude that the use of an extra engine, either before or behind, when judiciously and carefully applied, is attended with danger. They consider it quite indispensable for the purposes of carrying on with regularity and punctuality any considerable railway traffic, materially varying, as it must, in weight and resistance, from hour to hour, and from station to station, affected more or less by every change of wind and weather, and subject to the chances of occasional unforeseen defects in the numerous parts of mechanism of an engine.

I have, &c.

S. Laing, Esq.,
&c. &c.

CHARLES A. SAUNDERS, Secretary.

No. 43.
Great Western.

Appendix.

VII.
Returns relating
to Third Class
Passengers.

No. 1.
North Midland.

VII.—RETURNS RELATING TO THIRD CLASS PASSENGERS.

No. 1.

NORTH MIDLAND RAILWAY.

ANSWERS to Questions from the Board of Trade, January 1, 1842.

Superintendent's Office, Derby, January 4, 1842.

1. By four trains each way.
2. The down trains start at—

9. 15 A.M. taking $4\frac{1}{2}$ hours
 12. 45 P.M. „ $3\frac{1}{2}$ „
 4. 0 „ „ $4\frac{1}{2}$ „
 6. 0 „ „ $3\frac{1}{2}$ „

The up trains start at—

6. 0 A.M. taking $4\frac{1}{2}$ hours
 7. 30 „ „ $3\frac{1}{2}$ „
 1. 0 P.M. „ $3\frac{1}{2}$ „
 4. 0 „ „ $4\frac{1}{2}$ „

The average speed is 25 miles per mile up-hill, and 35 miles down-hill, in all cases.

Construction of Carriages.

1. Yes.
2. Open.
3. Two feet 8 inches from the floor.
4. None.
5. About 40.
6. Yes. Round the carriage, and two seats, back to back, lengthwise in the carriage, leaving a clear road across, between doors, and all round the carriage.
7. Luggage waggons only go by one passenger train, which conveys carriages of each class, and in this case the luggage is always put next to the engine.

R. Frost, Esq.
 &c. &c.

No. 2.

No. 2.
Arbroath and
Forfar.

ARBROATH AND FORFAR RAILWAY.

Arbroath and Forfar Railway Office,
 Arbroath, 20th January, 1842.

SIR,

IN answer to your circular of the 1st instant, I beg to state that on the Arbroath and Forfar Railway,—

1. Third-class passengers are taken by four trains from each terminus, and all these trains carry goods, and all classes of passengers.
2. These trains start as follows:—*From Forfar* at 7 P.M., at a quarter past 10 A.M., at half-past 1 P.M., and at a quarter past 4 P.M.; and *from Arbroath* at half-past 8 A.M., at a quarter before 12 A.M., at 3 P.M., and at half-past 5 P.M. The trains *from Forfar* at 7 A.M. and half-past 1 P.M., and the trains *from Arbroath* at a quarter before 12 A.M. and half-past 5 P.M., are called goods' trains, and travel at a speed of 15 miles an hour. The other trains are called passenger trains, and travel at a speed of 20 miles an hour. Goods' trains perform their journeys in one hour and a quarter, and passenger trains in one hour; the length of the line being 15 miles.
3. The construction of third-class carriages is as follows:—
 1. Most of them are provided with springs and spring buffers, the same as other passenger carriages, and those that are not, are being altered as quickly as possible.
 2. Some of them are closed, and some of them are open.
 3. In the open carriages the framing or pannelling at ends and sides is three and a-half feet in height above the floor.
 4. There are two partitions cross-seated, three and a-half feet in height.
 5. Each carriage is constructed to carry 30 passengers.
 6. There are seats for the passengers, which are arranged for their sitting back to back.
 7. The third-class passenger carriages are always placed behind the luggage waggons, and this position is never altered.

I may mention that on this line the comfort of the third-class passengers has been an object

of particular attention with the Directors, it being found that a very great proportion of those who travel by our trains cannot afford to go by any other class. Two of the third-class carriages for winter or bad weather are covered in, and the passengers are protected from exposure nearly the same as in the first-class carriages.

S. Laing, Esq.
&c. &c.

I am, &c.

JOHN MACDONALD, Secretary.

Appendix.
VII.
Returns relating
to Third Class
Passengers.
No. 2.
Arbroath and
Forfar.

No. 3.

STOCKTON AND DARLINGTON RAILWAY.

ANSWERS to Queries in reference to Third-Class Passengers.

Darlington, January 18, 1842.

Third-class passengers are conveyed twice a-day each way; viz., by merchandize train and by quick train.

Merchandize train starts from Darlington at a quarter before 8 o'clock in the morning, and returns from Stockton at a quarter before 7 in the evening; it travels at the rate of 16 miles per hour, and performs the journey in one hour. The quick train leaves Stockton at half-past 9 o'clock in the morning, and returns from Darlington at a quarter before 4 in the afternoon; it travels at the rate of 24 miles per hour, and performs the journey in 40 minutes.

Third-class carriages are provided with springs as other carriages; at present none of the Company's carriages are supplied with spring buffers: but the latter are in preparations. The greater part of the coaches have spiral drawing springs.

Open carriages railed at the sides and ends to the height of 4 feet; width of railing 3 inches.

Two partitions the same height as the framing.

Each carriage is adapted for the conveyance of 20 passengers.

There are seats for the third-class passengers, which are arranged as in the other carriages, across, the passengers riding face to face.

The third-class carriages, as well as all other carriages, invariably follow the luggage waggons.

I am, &c.

SAMUEL BARNARD, Secretary.

No. 4.

CLARENCE RAILWAY.

No. 4.
Clarence.

SIR,

Railway Department, Board of Trade,
Whitehall, 1st January, 1842.

IN consequence of the recent accident on the Great Western Railway, the Lords of the Committee of Privy Council for Trade have thought it their duty to ascertain whether proper precautions are taken to ensure the safety of the poorer class of passengers upon railways generally. I am therefore directed by their Lordships to request that the Directors of the Clarence Railway Company will furnish them with answers to the following questions:—

1. By how many and what description of trains in the course of the 24 hours are third-class passengers taken?
2. At what hours do such trains start, at what speed do they travel, and how long do they take to perform the journey?
3. What is the construction of third-class carriages?—Specifying,
 1. Whether provided with springs and spring buffers the same as other passenger carriages?
 2. Whether closed, partly closed, or open?
 3. Height of framing or pannelling at ends and sides?
 4. Whether any partitions in the body of the carriage, and if so, their height and position?
 5. How many passengers each carriage is constructed to carry?
 6. Whether there are seats for the passengers, and if so, how arranged?
 7. Where third-class, or other passenger carriages go with trains partly composed of luggage waggons, are such carriages placed before or behind the luggage waggons, and is such position invariably preserved, or is it altered according to the weight of the train, and other circumstances?

I am, &c.

S. LAING.

To the Secretary of the Clarence
Railway Company.

No third-class carriages used. Principally a coal line.

No. 5.

EASTERN COUNTIES RAILWAY.

Appendix.

VII.
Returns relating
to Third Class
Passengers.No. 5.
Eastern Counties.

SIR,

High Street, Shoreditch, London, 17th January, 1842.

REFERRING to your letter of 1st instant, I beg leave to annex answers to the several questions stated therein as desired.

I have, &c.

ANTHONY BULKELEY, Secretary.

S. Laing, Esq.,
&c. &c.

1. By how many and what description of trains in the course of the 24 hours are third class carriages taken?—Fourteen mixed trains.
2. At what hours do such trains start, and what speed do they travel, and how long do they take to perform the journey?—*Down*, half-past 8, 11, A.M.; 2, 3, half-past 4, 5, half-past 6, P.M. *Up*, quarter to 9, quarter to 10, quarter to 11, A.M.; half-past 12, half-past 3, half-past 5, half-past 6, P.M. Average speed 30 miles per hour; 47 minutes to perform the journey of 17½ miles.
3. What is the construction of third class carriages, and specifying—
 1. Whether provided with springs and spring buffers, the same as other passenger carriages?—With springs, draw-springs, and buffer-springs, the same as other passenger carriages.
 2. Whether closed, partly closed, or open?—Two descriptions; one with open rails, the other with solid pannelled sides, and no top covering.
 3. Height of framing or pannelling at end and sides?—Three feet all round.
 4. Whether any partitions in the body of the carriages, and if so, their height and position?—Some with one, others with two, and others with three divisions, three feet in height, the greater part of them transversely, and a few longitudinally.
 5. How many passengers each carriage is constructed to carry?—Some thirty, others forty.
 6. Whether there are seats for the passengers, and if so, how arranged?—Seats to all; those carrying thirty have seats in the centre, with side seats; those carrying forty have eight transverse seats, face to face.
 7. Where third class, or other passenger carriages go with trains partly composed of luggage waggons, are such carriages placed before or behind the luggage waggons, and is such position invariably preserved, or is it altered to the weight of the train and other circumstances?—A spring buffer truck on carriage springs, with draw-springs, is invariably placed next the engine and tender, to which is attached one-third class passenger carriage, then follow second and first class carriages, in the rear of which another third class carriage, with buffer springs, &c. as above; then follow the coach or carriage trucks, as occasion may require, all with springs. Buffer and draw-spring goods are rarely taken with the passenger trains, and then only with trucks having all the springs as above mentioned.

No. 6.
Preston and Wyre.

No. 6.

PRESTON AND WYRE RAILWAY, HARBOUR, AND DOCK COMPANY.

SIR,

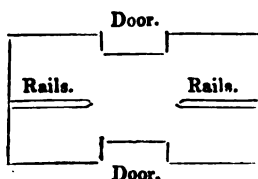
Fleetwood, 14th January, 1842.

In reply to your letter of the 1st instant, I beg to inform you that we have only one description of passenger trains, the *whole* of them taking first, second, and third class passengers, and no passenger carriages being conveyed by our goods' trains. I will, however, reply to your questions more at length as you have put them.

1 and 2. *All* the passenger trains take third class passengers, namely, three trains *each way* per day in winter, and four or five *each way* per day in summer. The usual rate of speed is 24 or 25 miles per hour, taking about an hour and five minutes to perform the whole journey, 20 miles, including the stoppage at three intermediate stations.

The third class carriages are constructed as follows:—

1. The frames, springs, spring-buffers, and every other part of them but the bodies, are made as well and expensively, and are indeed *precisely the same*, as the first and second class carriages.
2. The bodies are quite open.
3. The ends and sides are composed of strong panelling three feet in height.
4. They are partially divided by a strong rail let into the ends and the bottom, to prevent the pushing or pressure of the passengers against each other; but this rail does not go quite from end to end, having an opening in the middle of two feet six inches, to enable the passengers from either side to go out or come in at the doors, one of which is situated in the centre of each side of the carriage. Thus—



5. They contain 60 passengers each, but more than 40 or 50 are seldom carried in one, as there are always from one or two, to three, four, or more, in each train, according to the probability of passengers.

6. They contain no seats, on account of the shortness of the journey, and to make a greater difference between them and the first and second class, for even without seats great numbers of persons in affluent or comfortable circumstances go in them, and at all seasons.

7. Passenger carriages are not conveyed by the luggage or goods' trains; but, when too late for the luggage trains, and the goods have to be forwarded with speed, one or two loaded waggons are occasionally conveyed by a passenger train, in which case they are placed sometimes before and sometimes behind the passenger carriages, according to the place where the train picks them up on the line, and where they have to be left. They are, however, more usually placed behind, to be able to attach them to, or detach them from, the train wherever they may be required. A loaded waggon weighing little or no more than a full carriage, the concussion, in case of a stoppage in front, would not be greater to the carriage next the engine from one or two waggons, than from the same number of full carriages, except as far as respects the advantage and effect of the spring-buffers in carriages. This last circumstance has induced this Company to think of having some waggons fitted up with spring-buffers to use occasionally in this way with passenger trains for goods requiring great despatch, and which may have missed the luggage trains. The third class carriages are not placed next the engine, but behind the first and second class carriages.

S. Laing, Esq.,
&c. &c.

I am, &c.

JOHN POWER, Secretary.

Appendix.

VII.

Returns relating
to Third Class
Passengers.

No. 6.

Preston and Wyre.

No. 7.

DUNDEE AND NEWTYLE RAILWAY.

QUERIES regarding Third Class Passengers and Carriages on the
Dundee and Newtyle Railway.

No. 7.
Dundee and
Newtyle.

1. By how many and what description of trains in the course of the 24 hours are third class passengers taken?—Third class passengers are taken by all the passenger trains on this railway, which are at present three from each end daily.

2. At what hours do such trains start, at what speed do they travel, and how long do they take to perform the journey?—The present hours of starting are 8 and 11 o'clock A.M., and $\frac{1}{2}$ past 3 P.M. from each end; average speed about 15 miles an hour; perform the journey in from an hour to an hour and ten minutes.

3. What is the construction of third class carriages? specifying

1. Whether provided with springs and spring-buffers the same as other passenger carriages?—They are provided with springs, and with buffing and drawing springs, the same as all the other carriages.

2. Whether closed, partly closed, or open?—Covered with waterproof cloth on the top and at both ends above the panelling, and one of the sides in the winter time, supported by a wooden framing.

3. Height of framing or panelling at ends and sides?—Thirty-four inches.

4. Whether any partitions in the body of the carriage, and if so, their height and position?—Two partitions, dividing the body of the carriage into three compartments; height 34 inches.

5. How many passengers each carriage is constructed to carry?—Each carriage is constructed to carry 30 passengers.

6. Whether there are seats for the passengers, and if so, how arranged?—There are seats for all the passengers, arranged in the ordinary way across the carriages, entering from the sides.

7. Where third class, or other passenger carriages, go with the trains partly composed of luggage waggons, are such carriages placed before or behind the luggage waggons, and is such position invariably preserved, or is it altered according to the weight of the train, and other circumstances?—There are no luggage trains on this railway, and no passenger carriages are taken with the goods' trains; in the coach trains the different classes of carriages are arranged quite promiscuously.

Dundee and Newtyle Railway Office,
Dundee, 15th January, 1842.

SIR,

IN compliance with a request from the Right Honourable the Lords of the Committee of Privy Council for Trade, dated the 1st instant, I beg to hand you the above answers to the questions contained in their communication.

I am, &c.

JAS. STEPHEN, Accountant.

G. R. Porter, Esq.
&c. &c.

Appendix.

VII.

Returns relating
to Third Class
Passengers.No. 8.
Ballochney.

No. 8.

BALLOCHNEY RAILWAY.

SIR,

Glasgow, 12th January, 1842.

IN answer to your circular of the 1st instant, addressed to the Secretary of the Ballochney Railway Company, allow me to report, that no *third* class carriages for the conveyance of passengers are used on the Ballochney Railway, neither are passenger carriages conveyed by luggage trains on that railway.

S Laing, Esq.
&c. &c.

I am, &c.

JAS. MITCHELL, Secretary.

No. 9.
Edinburgh and
Glasgow.

No. 9.

EDINBURGH AND GLASGOW RAILWAY.

SIR,

Edinburgh, 12th January, 1842.

I AM instructed by the Directors of this Railway to acknowledge receipt of your letter of the 1st instant, and to furnish the following answers to your questions:—

1. It is proposed to send third-class passengers with both passenger trains (quick) and luggage trains (slow), but the number of trains by which they will be sent has not yet been fixed.
2. The hours of starting the third class passenger trains have not yet been fixed. The quick or passenger trains will perform the journey (46 miles) in two hours and a quarter, and the slow or luggage trains in about three hours and a half.
3. The construction of the third class carriages is as follows:—
 1. They are provided with bearing springs and leather braces, and with buffer springs, precisely the same as a first class carriage.
 2. They are altogether open above.
 3. The height of framing at sides and ends of the seated carriages is 3 feet, and the stand-up carriages have an iron railing standing 13 inches above the sides; from the floor to the top of the iron railing is therefore 4 feet 1 inch.
4. Each carriage is divided into four bodies; the divisions between the bodies are the same height as the sides; on the stand-up carriages the divisions have an iron railing the same height as already described; the divisions stand across the carriage.
5. Each carriage is divided into four bodies; the seated carriages are calculated to hold 8 in each body, or 32 in each carriage. In a very throng train the carriages will hold easily 40 passengers, that is, 10 in each body; the stand-up carriages are calculated to hold 12 in each body, or, in throng trains, 15; that is, 48 or 60 passengers to each carriage.
6. In those carriages intended to be run with the quick or passenger trains there are no seats; and in those to be run with slow or luggage trains there are seats, and the seats are *across* the carriage.
7. As this line is not yet opened, there are no trains, but in all probability the third class carriages run with luggage trains will be placed behind.

S. Laing, Esq.,
&c. &c.

I have, &c.,

J. MILLER.

No. 10.
Newcastle and
North Shields.

No. 10.

NEWCASTLE AND NORTH SHIELDS RAILWAY.

SIR,

Newcastle, 12th January, 1842.

YOUR letter of the 1st January has now been laid before the Board of Directors of this Railway, and I beg herewith to hand you the following reply to the questions therein contained:—

1. There are no third class passengers upon this railway; the first and second class are carried in the same train and all the Company's carriages have proper draw and buffer-springs of the same construction as the first class carriages on the London and Birmingham and Grand Junction Railways, excepting two, which, when used, are put in separate trains and placed between carriages having spring-buffers; these have proper draw springs, with buffers stuffed with hair.
2. Nil.
3. This line is used almost exclusively for the conveyance of passengers; one waggon strongly built is placed between the passengers and the engine in every train, and into this are placed the goods usually conveyed; if more goods are to be sent than this can contain, a second luggage waggon is placed behind the passenger carriages: this arrangement is invariably preserved.

By the foregoing answers I trust your inquiries are sufficiently explained, but should further detail be required I shall be glad to give it.

S. Laing, Esq.,
&c. &c.

I remain, &c.,

W. SWAN, Clerk

No. 11.

ULSTER RAILWAY.

Appendix.

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Returns relating
to Third Class
Passengers.No. 11.
Ulster.

SIR,

Belfast, 10th January, 1842.

I HAVE the honour to annex replies to questions contained in your circular of the 1st instant.

1. Third class passengers are taken by all the trains at present running on this line.
2. The hours of starting from Belfast are—7. 30; 10. 30; 1. 30; 5. Most to Lisburn only at 9 and 3 o'clock. On Sunday, 8 A. M.; and 4 P. M.
From Lurgan—9; 12; 3; 6. 30. On Sunday, 9. 30 A. M.; and 6. P. M. The distance is 20 miles, and one hour is taken to perform the journey. The speed, exclusive of stoppages, is about 30 miles per hour.

The construction of third class carriages is,—

1. Under framing with bearing springs, &c., the same as first and second class; they have at present no buffer springs, but they are in hand, and will speedily be applied.
2. The third class carriages are closed at the sides with panelling, and open at the top.
3. The height of the panelling is about 4 feet.
4. There are no partitions.
5. About 40 persons can be safely conveyed in these carriages.
6. There are no seats.
7. There are seldom more than two luggage waggons with the train, and these only lightly loaded with passengers' luggage, &c.; they are placed one before and one behind the train, as the engine and tender only are turned at each end. When any quantity of goods are conveyed, a special train is provided for these alone.

I have, &c.,

S. Laing, Esq.,
&c. &c.

J. G. SMITH, Secretary.

No. 12.

LIVERPOOL AND MANCHESTER RAILWAY.

No. 12.
Liverpool and
Manchester.

SIR,

Liverpool, 11th January, 1842.

I BEG to acknowledge the favour of your communication of the 1st instant, with sundry queries, respecting third class carriages and passengers.

In reply, I am instructed to inform you that the Liverpool and Manchester Company do not run third class carriages. Their second class coaches are composed of three compartments, the seats being arranged as in first class carriages. They are roofed, and boarded up close at each end; and at the sides they are closed as high as the elbows; and they have buffer and draw springs, the same as first class carriages.

It is not the practice of this Company to run any passenger carriages with the goods' trains, the passenger trains and the luggage trains being kept quite distinct.

I am, &c.,

S. Laing, Esq.,
&c. &c.

H. BOOTH.

No. 13.

DURHAM JUNCTION RAILWAY.

No. 13.
Durham Junction.

SIR,

South Shields, 11th January, 1842.

IN reply to your communication dated 1st January, I am instructed to inform you that on the Durham Junction Railway there are no third class passengers; neither are any passenger carriages taken with luggage trains.

I remain, &c.,

S. Laing, Esq.,
&c. &c.

T. E. HARRISON.

No. 14.

SHEFFIELD AND ROTHERHAM RAILWAY.

No. 14.
Sheffield and
Rotherham.

SIR,

Sheffield, 11th January, 1842.

IN reply to your question respecting the trains and traffic on the Sheffield and Rotherham Railway, I beg to remark as follows:—

1. Third class passengers daily go by every train, and nearly all are mixed trains between Sheffield and Rotherham.

2. The trains start at every integral hour from Rotherham, and at the half-past the hour from Sheffield, beginning at Sheffield at half-past 8 in the morning, and perform the distance

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VII.
Returns relating
to Third Class
Passengers.

No. 14.
Sheffield and
Rotherham.

in 12, 15, to 20 minutes, depending whether they stop at one, or both intermediate stations, or don't stop at all.

Rate of running from 20 to 30 miles per hour.

3. The third class carriages are all covered carriages, excepting two.

1. Have all bearing springs, and a few have spring-buffers.

2. Open at the sides, and two of them open at one end.

3. Height of framing, some 2 feet 8 inches, others 3 feet.

4. Two carriages are partitioned lengthway up the middle, and hold 36 to 40 passengers each or upwards, and the passengers get in at one end, having four seats longways, the sides being whole up to 2 feet 8 inches; the other third class carriages are partitioned transversely, having three compartments, and hold generally from 30 to 36, or sometimes 40 passengers, partitions in height as before.

6. All have seats.

All our trains are mixed trains, frequently having luggage waggons attached both before and behind, but generally before the passenger.

I think the above will answer all your questions, and should have great pleasure in furnishing any further explanation. I am so partial to spring-buffers that I would have them to every carriage, and have put them to a sheep carriage, which our Directors wished me to make.

I am, &c.

S. Laing, Esq.
&c. &c.

THOMAS PEARSON, Secretary.

No. 15.
Birmingham and
Derby Junction.

No. 15.

BIRMINGHAM AND DERBY JUNCTION RAILWAY.

ANSWERS to Questions of the Board of Trade, respecting the Conveyance of Third Class Passengers, dated 1st January, 1842.

SIR,

Birmingham, 12th January, 1842.

I am instructed to acknowledge the receipt of your letter of the 1st instant, requiring, for the information of the Board of Trade, answers to certain inquiries respecting the construction and use of the third class carriages on this line of Railway, and I am directed to transmit to you the inclosed Report from the Manager of the Company in reference thereto.

I am, &c.

THOMAS KELL, Secretary.

Q.

1. By two trains from Birmingham to Derby every day, by three from Derby to Birmingham every day except Sunday, and by two on Sunday. In all cases by ordinary passenger trains carrying first and second class passengers.

2. From Birmingham at 6. 45 A.M., and 6. 30 P.M. every week day, and on Sunday at 6. 45 A.M. and 5. 30 P.M. From Derby at 8. 25 A.M., 2. 15 P.M., and 4. 30 P.M. every week day, and at 8. 0 A.M. and 5. 30 P.M. on Sunday. The average speed of these trains is about 28 miles per hour, exclusive of stoppages, and the average time of performing the journey is about two hours.

3. The carriages are provided with springs and spring-buffers similar to those of the first and second class carriages. They are entirely open. The height of the framing or panelling at the ends and sides is 3 feet 6 inches. There are no partitions in the body of the carriage. Each carriage is constructed to carry about 35 persons sitting.

A seat runs round the sides of the carriage, and others are placed lengthways in the middle of the carriage. Luggage waggons are occasionally sent by all the passenger trains. When more than two waggons are sent, they are placed in front of the passenger carriages; when not more than two are sent they are placed either before or behind according to circumstances.

S. Laing, Esq.
&c. &c.

JOHN C. BIRKINSHAW.

No. 16.
Birmingham and
Gloucester.

No. 16.

BIRMINGHAM AND GLOUCESTER RAILWAY.

REPLIES to Circular of Board of Trade of 1st January, 1842, in reference to Third Class Passengers.

Birmingham, 13th January, 1842.

1. By two goods' trains and two of the regular passenger trains each way; being by one-half of the whole number of trains per day.

Note.—The goods' trains stop not only at the regular passenger stations, but at the several Police Stations; and a compound carriage for conveyance of first and second class passengers is, as well as the third class carriage, attached thereto for the accommodation of residents along the line.

2. Passenger Trains:—

Birmingham to Gloucester, 8½ A.M.; 6½ P.M. Gloucester to Birmingham, 11½ A.M.; 5 P.M., performing the journey in three hours, including stoppages; travelling speed 20 miles per hour.

Goods' Trains:—

Birmingham to Gloucester, 10 A.M.; 3½ P.M. Gloucester to Birmingham, 9½ A.M.; 3 P.M., performing the journey in 4½ hours, including stoppages; rate of speed 16 miles per hour.

1. Provided with bearing springs, but not with spring-buffers. (Hair stuffed ends.)
2. High sides and ends, no covering.
3. Ends and centre compartment (see next reply), 6 feet 6 inches high, sides 4 feet high (from floor.)
4. All the third class carriages are divided into three compartments, of which the centre is appropriated to passengers' luggage, with passenger trains; to small parcels of goods, with goods' trains.
5. About a dozen in each compartment, 24 per carriage.
6. There are no seats.
7. They invariably go behind the through goods, (or goods to Cheltenham, Gloucester, or Birmingham.) All other goods (which are comparatively trifling) are placed behind the passenger carriages.

GEORGE KING.

Appendix.**VII.**

Returns relating
to Third Class
Passengers.

No. 16.
Birmingham and
Gloucester.

No. 17.**BRANDLING JUNCTION RAILWAY.**

CIRCULAR from Railway Department, Board of Trade, dated 1st January, 1842, relative to the Conveyance of Third Class Passengers, and other Matters mentioned therein.

Gateshead, 10th January, 1842.

1. By how many, and what description of trains in the course of the twenty-four hours are third class passengers taken?
2. At what hour do such trains start, at what speed do they travel, and how long do they take to perform the journey?
3. What is the construction of third class carriages, specifying,—
 1. Whether provided with springs and spring-buffers, the same as other passenger carriages?
 2. Whether closed, partly closed, or open?
 3. Height of framing and panelling at ends and sides?
4. Whether any partitions in the body of the carriage, and if so, their height and position?
5. How many passengers each carriage is constructed to carry?
6. Whether there are seats for the passengers, and if so how arranged?

Answers to 1, 2, 3, 4, 5, and 6.

No third class passengers carried upon the Brandling Junction Railway. All the passenger carriages, both first and second class, are of the same construction as to springs, having both buffer and drag-springs.

7. Where third class or other passenger carriages go with trains partly composed of luggage waggons, are such carriages placed before or behind the luggage waggons, and is such position invariably preserved, or is it altered according to the weight of the train and other circumstances?—The general rule of the railway is, when goods are conveyed with passenger trains the goods' trucks are placed next to the engine and tender. On a portion of the line, one goods' truck is sent three times a day (there being eight passenger trains per day), and is placed in the middle of the train, viz.—between the train of carriages going to Sunderland and the train of carriages going to Shields, both being taken by the same engine to the point where the said truck and the latter train is disunited from the former; and on another part of the line one goods' truck is occasionally taken and placed at the end of the train to Shields; but, as stated above, when more than one goods' truck is taken, they are placed next the tender.

JOHN REWCASTLE, Clerk to the Company.

No. 18.**ST. HELEN'S AND RUNCORN-GAP RAILWAY.**

SIR,

St. Helen's, 11th January, 1842.

I HAVE the honour to acknowledge the receipt of your circular of the 1st instant, and reply to the first six questions this company do not carry any third class passengers; and, in answer to the seventh question, when goods are conveyed jointly with passengers, instructions are issued that the passengers' carriage is invariably placed behind the goods.

I am, &c.

S. Laing, Esq.,
&c. &c.

F. W. JAMES, Jun.

No. 18.
St. Helen's and
Runcorn-Gap.

Appendix.

VII.
Returns relating
to Third Class
Passengers.No. 19.
Midland Counties.

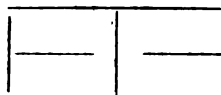
No. 19.

MIDLAND COUNTIES RAILWAY.

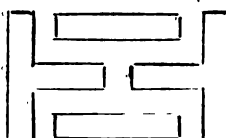
REPLIES to a Letter received from the Board of Trade, 1st January, 1842.

Leicester, 10th January, 1842.

1. By how many and what description of trains in the course of the twenty-four hours are third class passengers taken?—No. 2 up, and No. 3 down; two each way between Nottingham and Derby.
2. At what hours do such trains start, at what speed do they travel, and how long do they take to perform the journey?—See annexed Time Bill.
3. What is the construction of third class carriages, specifying—
 1. Whether provided with springs and spring-buffers, the same as other passenger carriages?—Yes.
 2. Whether closed, partly closed, or open?—Open.
 3. Height of framing or panelling at ends and sides?—Three feet nine inches.
4. Whether any partitions in the body of the carriage, and if so their height and position?—Divided by rails thus, 3 feet 8 inches high.



5. How many passengers each carriage is constructed to carry?—About 60.
6. Whether there are seats for the passengers, and if so, how arranged?—No seats to those running only between places on the Midland Counties Railway; those connected with the London and Birmingham and North Midland have seats.



7. Where third class or other passenger carriages go with trains partly composed of luggage waggons, are such carriages placed before or behind the luggage waggons, and is such position invariably preserved, or is it altered according to the weight of the train, and other circumstances?—No passengers are conveyed with the luggage trains; but between Leicester and Nottingham, and Derby, luggage waggons are occasionally attached to passenger trains, but are invariably placed next the engine.

J. T. BELL, Secretary.

No. 20.
Sheffield, Ashton-
under-Lyne, and
Manchester.

No. 20.

SHEFFIELD, ASHTON-UNDER-LYNE, AND MANCHESTER RAILWAY.

SIR,

15, Piccadilly, Manchester, 10th January, 1842.

AGREEABLE to the request contained in your communication of the 1st instant, I beg to hand you, for the information of the Lords of the Committee of Privy Council for Trade, the following answers to the queries therein asked:—

1. Third class passengers are conveyed by all the trains, there being seven trains each way in the 24 hours, and each train consists of first, second, and third class carriages.
2. For times of starting see the inclosed Time Bill; the speed, without stoppages, is 25 miles per hour; the time taken to perform the journey of eight miles, with four stoppages, is 33 minutes.
3. As regards the construction of third class carriages,—
 1. They are provided with spring buffing and drawing apparatus, similar to the first and second class carriages. The bearing springs are not hung in leather braces, but the carriage rests directly upon them.
 2. They are quite open.
 3. The framing is 3 feet 3 inches high from the floor, with an iron railing of 8 inches, making the total height of the sides and ends 3 feet 11 inches.
 4. No partitions except two stays at the sides, 2 feet wide, same height as the sides.
 5. Each third class carriage is constructed to carry 40 passengers.
 6. They are not provided with seats.
 7. They are not attached to luggage trains.

Hoping these remarks will be satisfactory,

I am, &c.

S. Laing, Esq.,
&c. &c.

J. PLATFORD, Secretary.

No. 21.

LONDON AND BIRMINGHAM RAILWAY.

ANSWERS to the Queries of the Board of Trade, addressed to the London and Birmingham Railway Company, 1st January, 1842.

Office, Euston Station, 10th January, 1842.

1. Third class passengers are conveyed by a down passenger train daily, Sundays excepted, and by a corresponding train up.

2. The down train leaves the Euston Station at 7 A.M., and arrives at Roade at 10. 40, remains there till 12. 30 P.M., to allow time for the day mail and other fast trains to pass, and for the passengers to refresh themselves, and arrives at the Birmingham Station at 3. 15 P.M.

The corresponding up train leaves the Birmingham Station at 2. 15 P.M., arrives at Roade at 5. 30, and remains there till 6. 50 P.M. for the same purposes as the down train, and arrives at the Euston Station at 10 P.M. The average rate of speed of both trains while travelling is about 22 miles per hour. The Company have erected at Roade, for the exclusive use and comfort of the third class passengers, a spacious stone building where they may remain under shelter and obtain suitable refreshments.

3. It is intended that the carriages for the use of third class passengers shall all be assimilated in construction to those in which the second class passengers are now conveyed, and shall also be fitted with spring-buffers. The carriages hitherto used, have

1. Leather buffers stuffed with hair.

2. Are open.

3. Have a framing on the sides 2 feet 8 inches from the floor, and at the ends and compartment divisions 2 feet 11 inches.

4. Have three compartments made in panels of the same height as the ends, with double seats arranged as in the carriages for second class passengers.

5. Each carriage contains 24 passengers.

6. Each seat is arranged for 4 passengers.

7. The trains are upon occasion used to convey horses and cattle, but for the most part only third class passengers, return empty carriages, and a break waggon (containing passengers' luggage) for the Guard.

The carriages with passengers are placed behind any others which may be going through to the termini; such of these carriages, however, as are to be left at intermediate stations are ranged from the rear of the train in the order in which it is required that they should be detached.

The guard's break waggon is placed immediately behind the passenger carriages, except when particular circumstances require a partial change, but in no case is the regulation for placing the passenger carriages behind all other carriages or trucks going through ever departed from.

R. CREED, Secretary.

No. 22.

GRAND JUNCTION RAILWAY.

SIR,

Liverpool, 7th January, 1842.

I HAVE the honour to acknowledge the receipt of your favour under date the 1st January, requesting answers to certain queries relative to the transmission of the poorer classes by railway, and I have herewith sent them accordingly.

1. By how many and what description of trains in the course of the 24 hours are third class passengers taken?—Third class passengers are only carried by one train in the day, and this is a mixed one of first, second, and third class carriages.

2. At what hours do such trains start, at what speed do they travel, and how long do they take to perform the journey?—This train starts from both termini at 6 A.M., and keeps second class time, or 17 miles an hour, performing the journey in 5½ hours.

3. What is the construction of third class carriages? specifying, 1st, Whether provided with springs and spring-buffers, the same as other passenger carriages? 2nd, Whether closed, partly closed, or open? 3rd, Height of framing or panelling at ends and sides?—The third class carriages are provided with the same springs and buffers as the better description; they are seated, but open at the sides, and without covers. The height of framing is 33 inches at the ends, and 30½ at the sides.

4. Whether any partitions in the body of the carriage, and if so, their height and position?—There are two partitions 11½ inches from the seat up flush with the framing or panelling.

5. How many passengers each carriage is constructed to carry?—24.

6. Whether there are seats for the passengers, and if so, how arranged?—There are eight seats in each division of the carriage, which has three compartments; two rows in each compartment, facing each other.

7. When third class, or other passenger carriages go with trains partly composed of luggage waggons, are such carriages placed before or behind the luggage waggons, and is such position invariably preserved, or is it altered according to the weight of the train and other circumstances?—We do not permit passengers to travel with luggage trains at all.

I have, &c.

S. Laing, Esq.,
&c. &c.

MARK HUISE, Secretary.

Appendix.

VII.

Returns relating
to Third Class
Passengers.

No. 21.

London and
Birmingham.

No. 22.

Grand Junction.

Appendix.

VII.

Returns relating
to Third Class
Passengers.No. 23.
North Union.

No. 23.

NORTH UNION RAILWAY.

SIR,

Preston, 8th January, 1842.

IN reply to the circular of the 1st instant, relating to conveyance of the poorer class of passengers upon railways, &c., I am directed to inform you that this Company do not use third class carriages. The second class carriages, in which the class of passengers alluded to travel on this line, are invariably accompanied by first class carriages, and it has always been the uniform rule of this Company not to mix carriages or waggons carrying goods with those conveying passengers.

S. Laing, Esq.,
&c. &c.

I am, &c.

J. CHAPMAN, Secretary.

No. 24.
London and South
Western.

No. 24.

LONDON AND SOUTH WESTERN RAILWAY.

SIR,

Nine Elms Station, 8th January 1842.

I AM directed to acknowledge the receipt of your communication of the 1st instant, requesting to be furnished, for the information of the Lords of the Committee of Privy Council for Trade, with particulars relative to the mode of transit of third class passengers upon this line of Railway.

With reference to your several inquiries, I have the honour to acquaint you,

1. That third class passengers are conveyed by the goods' day-trains, of which there are two, one being despatched from Nine Elms at noon, another from Southampton at 9. 15 o'clock.
2. The third class carriages are constructed with open frame and body of similar size and dimensions as second class carriages, with the like wheels, springs, and axles.
 1. Springs and buffer-springs of the same description as other passenger carriages.
 2. Open.
3. Height of framing or panelling at ends and sides 2 feet 11 inches.
4. With partitions which are framed.
5. Capable of accommodating 24 passengers.
6. The seats are transverse, as in the second-class carriages.
7. The passengers' carriages are placed next to the goods' waggons destined for the distant terminus, the goods for the intervening stations being attached behind, and consequently, by this arrangement, which is not altered during the journey, the position of the third class passengers is central or nearly so.

The question of the conveyance of third class passengers is under the consideration of the Directors, and they will have the honour of again communicating with the Lords of the Committee of Privy Council for Trade thereon.

S. Laing, Esq.
&c. &c.

I have, &c.

ALFRED MORGAN, Secretary.

No. 25.
Manchester and
Birmingham.

No. 25.

MANCHESTER AND BIRMINGHAM RAILWAY.

ANSWERS to Questions put by the Board of Trade in their Letter dated Whitehall,
1st January, 1842.

1. By how many, and what description of trains, in the course of the 24 hours, are third class passengers taken?—Twelve trains each way between Manchester and Stockport, and all carrying first, second, and third class passengers.

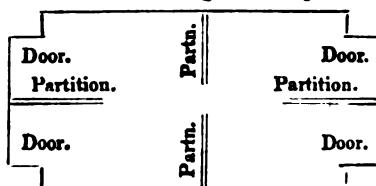
2. At what hours do such trains start, at what speed do they travel, and how long do they take to perform the journey?—From Stockport at 8, 9, 10, 11, and 12 A.M., and 1, 3, 4, 5, 6, 7, and 8½ P.M.; from Manchester at 8½, 9½, 10½, 11½, and 12½ A.M., and 1½, 3½, 4½, 5½, 6½, 7½, and 9 P.M. Time allowed for journey, 15 minutes; speed 25 miles an hour.

3. Are the third class carriages provided with springs and spring-buffers, the same as other passenger carriages?—The third class carriages are provided with springs and buffers of the same description as the other passenger carriages.

4. Whether closed, partly closed, or open?—Open.

5. Height of framing or panelling at ends and sides?—Height of panelling all round three feet three inches, with iron rails and supports one foot above that.

6. Whether any partitions in the body of the carriage, and if so, their height and position?—Four partitions, three feet three inches in height, and placed as per annexed sketch:—



7. How many passengers each carriage is constructed to carry?—Sixty.
 8. Whether there are seats for the passengers, and if so, how arranged?—No seats.
 9. Where third class or other passenger carriages go with trains partly composed of luggage waggons, are such carriages before or behind the luggage waggons; and is such position invariably preserved, or is it altered, according to the weight of the train and other circumstances?—No luggage trains.

E. J. CLEATHER, General Superintendent.

Appendix.

VII.
Returns relating
to Third Class
Passengers.

No. 26.
Newcastle-upon-
Tyne and Carlisle.

No. 26.

NEWCASTLE-UPON-TYNE AND CARLISLE RAILWAY.

SIR,

Newcastle-upon-Tyne, 8th January, 1842.

I AM desired to acknowledge the receipt of your letter dated the 1st instant, with reference to the conveyance of the poorer classes of passengers upon railways, and to inform you that there not being any third class trains by which passengers are carried upon this line, it only appears necessary to give a reply to the last query.

The passenger carriages, when it is a mixed train, are now invariably placed behind all heavy trucks or waggons, an experience of six years having taught the Directors to consider this to be infinitely the safest arrangement.

I have, &c.

JOHN ADAMSON, Secretary.

S. Laing, Esq.
&c. &c.

No. 27.

DURHAM AND SUNDERLAND RAILWAY.

SIR,

Durham, 8th January, 1842.

I AM requested by the Directors of the Durham and Sunderland Railway Company to acknowledge the receipt of your letter of the 1st instant, and to inform the Lords of the Committee of Privy Council for Trade that there are no third class passenger carriages run upon the Durham and Sunderland Railway; and that in all cases where passenger carriages go with trains partly composed of luggage waggons, such carriages are placed behind the luggage waggons; and, further, that such position is invariably preserved.

I am, &c.

JOHN TIPLADY.

S. Laing, Esq.
&c. &c.

No. 27.
Durham and
Sunderland.

No. 28.

LONDON AND CROYDON RAILWAY.

SIR,

London and Croydon Railway Company,
205, Tooley Street, 7th January, 1842.

YOUR letter of the 1st instant, which I had the honour to receive on the 4th, has been perused by the Board of Directors of this Company, and I am requested by them to communicate to you the following particulars in conformity therewith:—

1. The third class passengers on this railway are conveyed by all the regular passenger trains, and by them only.
2. The trains start at the hours specified in the inclosed bill. The average speed is about 20 miles per hour, including stoppages, the journey of 10½ miles occupying a little more than 30 minutes.
- 3.—
 1. The third class carriages are provided with efficient bearing and buffing springs.
 2. Two of the carriages are open, the other two are covered at the top, and closed at the ends; they are used alternately.
 3. The height of the panelled sides is 3 feet 8½ inches, and the ends of the open carriages the same.
 4. There are no solid partitions in the carriages; there is one bar running along the middle of the carriage *endwise*, and a similar one crossing it *athwart* the carriage at the height of the top of the panelled sides, to brace the panelling.
 5. They are calculated to carry 50 people.
 6. There are no seats.
 7. The third class carriage is commonly in the middle of the passenger train.

I am, &c.

R. S. YOUNG, Secretary.

S. Laing, Esq.,
&c. &c.

No. 28.
London and
Croydon.

No. 29.

GREAT NORTH OF ENGLAND RAILWAY.

Appendix.

VII.
Returns relating
to Third Class
Passengers.

No. 29.
Great North of
England.

SIR,

Darlington, 6th January, 1842.

IN reply to your letter of the 1st instant, on the subject of third class passengers and carriages, I beg to acquaint you as follows:—

1. Third class passengers are conveyed by eight trains in the 24 hours; that is, by every passenger train except the mail trains, and by no others.
2. Trains conveying third class passengers—

Leave Darlington.		Perform the Journey.	Speed per Hour, including Stoppages.
		Hours.	Miles.
6	15 A.M.	2	22½
9	15 A.M.	2½	20
12	15 P.M.	2½	20
6	30 P.M.	2½	20
Leave York.			
9	30 A.M.	2½	20
11	30 A.M.	2½	20
3	30 P.M.	2½	20
5	0 P.M.	2	22½

The construction of third class carriages is as follows:—

1. They are provided with springs and spring-buffers the same as other passenger carriages.
2. They have pannelled sides, and no roof.
3. The height of the ends and sides above the flooring is 3 feet.
4. There are no partitions in the body of the carriage.
5. The carriage is constructed to carry 30 passengers.
6. There are seats placed lengthwise,—one along each side, and a double one, with a back to it, down the middle.

7. The third class carriage is always placed in the rear of the other passenger carriages. Passenger carriages have never been sent with the merchandize trains. Merchandize waggons are taken occasionally by all the passenger trains; they are placed either next to the engine, or behind the passenger carriages, but there is no invariable rule.

The Company have one third class carriage of a different construction. It carries 24 persons; the seats are placed across, as in the second class carriages; there are no spring-buffers, the traction rod in the centre being intended to act as a buffing rod.

G. R. Porter, Esq.,
&c. &c.

I am, &c.,

W. O'BRIEN, Secretary.

No. 30.
Chester and
Birkenhead.

No. 30.

CHESTER AND BIRKENHEAD RAILWAY.

Chester and Birkenhead Railway Company,
Birkenhead, 6th January, 1842.

SIR,

IN reply to your circular of the 1st instant, I beg to inform you that the Chester and Birkenhead Railway Company have for some months past been running four classes of carriages, viz.—

1. The first class similar to the Liverpool and Manchester Railway, Grand Junction, &c., &c.; the second class closed in and covered, similar to the Grand Junction Carriages; the third class with seats, but no cover; the fourth class, or "stand-up," which are merely railed waggons without seats. These four classes are sent by all the trains, except the two mail trains, at present six times per day in each direction.

2. The times of starting these mixed trains are as follows:—From Chester, 8.30 A.M., 10.30 A.M., 12.30 P.M., 3.30 P.M., 6 P.M., and 7.30 P.M.; from Birkenhead, 8.20 A.M., 10.20 A.M., 12.20 P.M., 2.20 P.M., 4 P.M., and 6.20 P.M. Rate of travelling 25 to 30 miles an hour when running, or exclusive of stoppages at the intermediate stations, of which there are four, or about 20 miles per hour including all stoppages.

3. The construction of the third class carriages:—

1. They are provided with springs and spring-buffers, the same as the first and second class, but the fourth class, or "stand-ups," have no spring-buffers.
2. The third class carriages are quite open. The fourth class carriages are also open.
3. Height of framing or panelling, 3 feet 6 inches.
4. The third class carriages have seats running longitudinally, with backs to them, which also answer as partitions; but the fourth class have had no partition hitherto, but the Directors have just given orders for some to be made.
5. The third class carriages are capable of carrying about 50 passengers. The fourth about the same number.
6. The seats of the third class carriages run lengthwise. See previous description.
7. There are no trains exclusively for goods on this line; the small quantity carried, seldom exceeding half a waggon load, is sent with the passenger trains, and placed in front,

or behind, according to circumstances; but the lowest description of passenger carriages are invariably placed in front of the train.

But, in conclusion, I beg to state that the Company are just on the point of discontinuing one of the preceding class of carriages, *viz.*, the third, or open carriages with seats, and running only first, second, and third class, the latter being uncovered, and without seats.

S. Laing, Esq.,
&c. &c.

I am, &c.,

JOHN DIXON, the Company's Engineer.

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VII.
Returns relating
to Third Class
Passengers.

No. 30.
Chester and
Birkenhead.

No. 31.

HARTLEPOOL DOCK AND RAILWAY.

SIR,

Hartlepool, 7th January, 1842.

I HAVE to acknowledge the receipt of your letter of the 1st instant, conveying the request of the Lords of the Committee of Privy Council for Trade, that a return should be made by the Hartlepool Dock and Railway Company to their Lordships, on the precautions taken to ensure the safety of the poorer class of passengers travelling upon their railway. In reply to the several questions proposed, I beg to state that the Hartlepool Company do not run third class trains, nor do they run any coaches with their luggage or merchandize trains.

I have, &c.

S. Laing, Esq.
&c. &c.

WM. DAVISON.

No. 31.
Hartlepool.

No. 32.

NORTHERN AND EASTERN RAILWAY.

SIR,

Office, High Street, Shoreditch, 6th January, 1842.

I AM desired by the Directors of the Northern and Eastern Railway Company to acknowledge the receipt of your letter of the 1st instant, and to give the following replies to the questions therein asked; *viz.*, to Question—

1. Third class passengers are conveyed on the Northern and Eastern Railway by two trains each way, from London to Spelbrook and intermediate places, and from Spelbrook to London and intermediate places, with the usual passenger trains.
2. They start at 8 A.M. and 7½ P.M. from London, and from Spelbrook at 8½ A.M. and 6½ P.M., and on Sundays with all the trains; *viz.*, at 9½ A.M., 2½, 3½, and 6½ P.M. from London, and from Spelbrook at 9½ A.M., 1½, 4, and 6½ P.M.; and they travel at the rate of about 20 to 25 miles per hour, and perform the whole journey in 1½ hour.
3. The third class carriages on this railway have—
 1. Spring-buffers.
 2. Are closed all round.
 3. The height of the side panel is 3 feet, with a rail 10 inches above that.
4. Have no close partitions in the body of the carriage, but a transverse rail dividing the carriage into two compartments.
5. They are constructed to convey at one time 60 to 70 passengers each carriage.
6. There are no seats.
7. No goods or luggage (except passengers') are conveyed yet on this railway.

I have, &c.

S. Laing, Esq.
&c. &c.

WILLIAM BOURNE, Secretary.

No. 32.
Northern and
Eastern.

No. 33.

MANCHESTER, BOLTON, AND BURY CANAL AND RAILWAY.

SIR,

Manchester, 6th January, 1842.

IN reply to the questions contained in your communication of the 1st instant, I beg to state—

1. Third class passengers are taken by six passenger trains in the 24 hours, three trains each way.
2. The trains conveying third class passengers start from Manchester at 7½ A.M. and 12½, 7½ P.M., and from Bolton at 8 A.M. and 2½, 7½ P.M. They run the 10 miles in 40 minutes, stopping usually four times.
3. The third class carriages have bearing springs, but no spring-buffers.
 1. They are not closed, having no tops.
 2. They are closely boarded at ends and sides to a height of three feet, and they are surrounded by an iron railing one foot above the top of the framing.
 3. There are no partitions in the carriages.
4. Each is constructed to carry 40 passengers.
5. They have no seats.

No. 33.
Manchester, Bolton,
and Bury.

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Passengers.No. 33.
Manchester, Bolton,
and Bury.

6. The whole of the passenger trains on this line have luggage attached to them, but not more than three or four waggons usually; and the trains scarcely ever exceed nine carriages and waggons in the aggregate, so that the momentum of the whole train is not more than half that of many of the London and Birmingham passenger trains.
7. The luggage is invariably placed behind the passenger carriages.

S. Laing, Esq.
&c. &c.

I am, &c.

JOHN HAUKSHAW.

No. 34.
Lancaster and
Preston
Junction.

No. 34.

LANCASTER AND PRESTON JUNCTION RAILWAY.

SIR,

Lancaster, 6th January, 1842.

IN reply to your letter of the 1st instant, I have to acquaint you:—

1. Third-class passengers are taken by three trains from Lancaster daily, and return by two, such trains being ordinary trains of first, second, and third-class passenger.
2. At 7. 10 A.M.; 1. 10 P.M. from Lancaster, and 11 A.M.; 5 P.M. from Preston. Speed 20 miles in one hour, including stoppages; also at 5. 30 P.M. from Lancaster. Speed 20 miles in 47 minutes, including stoppages.
3. The construction of third class carriages, are:—
 1. Provided with springs and one with spring-buffers, the other with leather buffers.
 2. Some covered and some open.
 3. Height of framing and panels about 3 feet, which is the same height as the sides of the second class.
4. No partition except the seats.
5. Calculated to carry from 30 to 40 passengers.
6. Seats all round, and seats down the centre.
7. No passengers are taken by luggage trains on this line.

S. Laing, Esq.
&c. &c.

I am, &c.

S. E. BOLDEN, Secretary.

No. 35.
Garnkirk and
Glasgow.

No. 35.

GARNKIRK AND GLASGOW RAILWAY.

SIR,

Glasgow, 5th January, 1842.

IN answer to the inquiries in your circular of the 1st current received this day, I presume it is only necessary for me to state, that there are no third class carriages on the Garnkirk and Glasgow Railway. The first and second class carriages are always run in train together, without goods or luggage waggons. The second class carriages are covered on the top, at the ends, and on the weather sides. They have generally cushions on the seats, and are equally safely constructed with the first class carriages; and in fact only differ from them in not being lined with cloth, and in being without glass.

Ten years experience has confirmed us in the propriety and good policy of giving comfortable and safe accommodation to every class, without aiming at splendour, which is not wanted by the mass of our passengers, and which our rates of fare (under one penny per mile) will not afford.

If any further information is required I shall be happy to give it.

S. Laing, Esq.
&c. &c.

I am, &c.

C. A. KING, Secretary and Manager.

No. 36.
Glasgow, Paisley,
Kilmarnock, and
Ayr.

No. 36.

GLASGOW, PAISLEY, KILMARNOCK, AND AYR RAILWAY.

SIR,

Railway Office, Glasgow, 5th January, 1841.

IN answer to queries in your circular of date the 1st instant, I beg to state—

- 1 and 2. Four thorough passenger trains are started from each terminus in the course of the day; and two additional passenger trains running between Johnston and Glasgow only; also two luggage trains from each end; and each start at the following hours, and have a description of carriages as under:—

Winter Arrangements.

From Glasgow.

- | | | |
|-----------------------|---|--|
| $\frac{1}{2}$ past 7. | — | Passenger train to Ayr, with first, second, and third class carriages. |
| $\frac{1}{2}$ " 9. | " | Johnston, with first, second, and third class carriages. |
| $\frac{1}{2}$ " 10. | " | Ayr, with first and second class carriages; and third class to Johnston. |

- $\frac{1}{2}$ past 1. Passenger train to Ayr, with first and second class carriages; and third class to Johnston.
 $\frac{1}{2}$ " 4. " Ayr, with first, second, and third class carriages.
 $\frac{1}{2}$ " 6. " Johnston, with first, second, and third class carriages.

From Ayr.

At 8 o'clock.—Passenger train to Glasgow, with first, second, and third class carriages.

- 11 " " " first and second class carriages; and third class from Johnston.
 2 " " " first and second class carriages; and third class from Johnston.
 5 " " " first, second, and third class carriages.

$\frac{1}{2}$ past 10 A. M. and $\frac{1}{2}$ past 7 P. M. from Johnston to Glasgow, passenger train, with first, second, and third class carriages.

Time for journey of 40 miles, including stoppages, two hours. Speed, 25 miles an hour.

3. The under frame work of the third class carriages are as substantially fitted up as the first class, both as regards the style of workmanship and strength of material, &c.; and are constructed with—

1. Drawing springs and buffer-springs, same as on first class.
2. Some of the third class carriages are covered on the top and partly closed at the sides, and others are neither.
3. Height from rails to centre of buffer rod, 3 feet 3 inches, which is also the centre of the buffer beam.
4. All the carriages have divisions or partitions, height 3 feet 10 inches.
5. Each carriage is intended to carry 35 passengers.
6. Some of the carriages have seats, others have not.
7. There being no passenger carriages sent with the luggage train, further answer is unnecessary.

I am, &c.,

S. Laing, Esq.,
&c. &c.

J. F. SMITH, Secretary.

No. 37.

MARYPORT AND CARLISLE RAILWAY.

SIR,

Carlisle, 5th January, 1842.

WE have no third class passengers. In *descending* from the country our passenger carriages are placed behind the laden goods' waggons or luggage. In ascending the line, the passengers' carriages are placed before the goods' waggons, which are generally empty waggons returned to the coaleries.

I am, &c.,

S. Laing, Esq.,
&c. &c.

WILLIAM MITCHELL.

No. 38.

MANCHESTER AND LEEDS RAILWAY.

SIR,

Superintendent's Office, Lees Street, Oldham Road,
Manchester, 6th January, 1842.

I NOW wait upon you, for the information of the Right Hon. the Lords of the Committee of Her Majesty's Privy Council, appointed for Trade and Foreign Plantations, with answers to certain questions proposed by you in your circular letter, dated the 1st January instant, so far as this railway is concerned:—

1. By every train except those for general merchandize.
2. For the information required, I inclose one of our time tables.
3. For information on the construction of our third class carriages, I enclose a copy of specification.

Carriages specifying

1. See specification.
2. See specification.
3. See specification.
4. See specification.
5. About 40.
6. See specification.
7. They are placed sometimes before and sometimes behind, according to circumstances.

In communicating which,

I am, &c.

S. Laing, Esq.,
&c. &c.

W. ROBINSON.

Appendix.

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Returns relating
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Glasgow, Paisley,
Kilmarnock, and
Ayr.

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Maryport and
Carlisle.

No. 38.

Manchester and
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to Third Class
Passengers.

No. 38
Manchester and
Leeds.

SPECIFICATION FOR A THIRD CLASS CARRIAGE.

The Carriage to be the same in all respects as the Pattern Carriage, to which reference must be had.

THE accompanying drawing is a representation of the carriage wanted. Fig. 1 is the side view; fig. 2 is the end view; fig. 3 is the plan of the under frame. The whole of the body and carriage is to be made of well-seasoned ash, except the carriage sides, which may be made of well-seasoned foreign oak, if more convenient than ash. The body is made separate from the carriage, or under frame, and is bolted thereon. The length of carriage, including the buffers, is 19 feet 6 inches, the width is 6 feet 2 inches, all outside measure. The length of the body is 14 feet 6 inches, the width is 7 feet, the height is 3 feet, with a double railing of iron, 12 inches high, round the body;—the foregoing dimensions are all outside measure.

The following are the dimensions of the timbers:—body, bottom sides, 6 inches wide, by 2½ inches thick; end bottom bars, 3½ inches wide by 2½ inches thick; the other bottom bars, seven in number, 2½ inches square; four corner pillars, 3½ inches wide at the foot, and light-

ened to 2½ inches square, thus, ; ten other standing pillars between, 3½

inches at the foot, and lightened to 1½ inch from the seat upwards. Stout corner plates are fixed to the foot of every pillar, likewise ash battens placed beneath each pillar. The middle rail on the side (A), 2½ inches wide by 2½ inches thick. The top rail (B), 2½ inches wide by 1½ inch thick. Ten straight standing pillars

The bottom boards run lengthwise of body, and are 1½ inch thick, properly tongued and grooved; the bottom bars are framed the thickness of the boards below, and the bottom bars are let into the carriage sides for a support, the ends of which are neatly concealed with a moulding placed underneath the bottom sides, running from end to end of the carriage sides. The front protection board at ends of body (fig. 2 c) is composed of ten uprights 2½ inches square, with six strong corner plates, extending the whole width of the platform, up the corner pillars, and the two centre pillars. The middle rails (d) 2½ inches square; top rails (e) 2½ inches wide by 1½ inch thick. Four doors, one at every corner of the body. Door pillars 2½ inches wide by 1½ inch thick; top of doors 2½ inches wide by 1½ inch thick; door bottoms 2 inches wide by 1½ inches thick; middle rails 2½ inches wide by 1½ inch thick; the doors to be provided with strong brass hinges, double joints, and with outside brass door handles, with spring catch, &c., and safety hooks, &c., as per pattern carriage. The whole of the panels to be of pine, very dry, ½ inch thick, free from knots and shakes, to be well seasoned before put in, and properly canvassed when in.

THE CARRIAGE, OR UNDER-FRAME.

The sides of under-frame to be of one piece running the whole length, 10 inches deep by 3 inches thick, the end bars of the same dimensions; the cross bars in the centre 3 inches square; the upper bars, fig. 3 (a), on which two of the body bars rest, is framed 1 inch below the top of carriage side, to receive the bottom of the body; these bars are 2½ inches wide by 2 inches thick. The diagonal bars, and also the centre bars, are 3 inches square; the diagonals are to be placed 6 inches from the carriage sides in the corner, to allow the wheels to work; the block in the centre of the carriage 13 inches wide by 3 inches thick. The buffers, it will be seen, are composed of two pieces of ash, one of which is placed *inside*, and the other *outside* of the carriage sides, and secured thereto with bolts; the diameter of the buffers is 10 inches; the cushion is a pad of leather 6 inches long, properly stuffed with horsehair, and secured to the buffer blocks with plates of iron screwed on. The draw spring is composed of 10 plates of ½ inch steel, 2 feet 10 inches long; the draw rods, plates, &c., connected therewith, to be the same as in the pattern carriage. The whole carriage to be furnished with axle guards, roller boxes, corner plates, steps, bottom plates, &c. &c., precisely the same as in the pattern carriage; the bearing springs the same length as in the pattern, composed of 11 plates of ½ inch steel 3 inches wide. The whole of the wood work, as well as the iron work, to be properly put together with good white lead, and properly secured. The painting to consist of two coats of lead colour, and two coats of dark olive green; to be properly picked out, and to receive two coats of good varnish; the inside to be painted with two coats of dark drab.

The wheels, axles, axle boxes, &c., will be furnished by the Company; which will have to be put under and properly painted, &c., by the contractor.

The whole of the materials, both timber, iron, steel, &c. to be of the best description, and the workmanship of the best kind; and the whole to be finished in a neat and substantial manner, and to be subject to the approval of a person appointed by the Directors.

Any particulars omitted in this specification, to be supplied on reference to the pattern carriage, which may now be seen at

The carriages to be delivered at the Company's Station, on or before

Above are what is termed "stand-up carriages;" they have no seats in them, but the sides braced together with a strong ash bar, placed in the centre, which reaches across from side to side. They have also a footboard along the outside reaching from end to end, placed so as to prevent a person from falling under, or in reach of the wheels.

No. 39.

BOLTON AND PRESTON RAILWAY.

Appendix.

VII.

Returns relating
to Third Class
Passengers.

No. 39.

Bolton and Preston.

SIR,

Bolton, 4th January, 1842.

IN reply to your circular of the 1st instant, I beg to state—

1. That there are four trains each way daily on this line, except on Sundays; that third class carriages, as well as first and second, are attached to every train, and also a few waggons loaded with coal one way, and a corresponding number of empty waggons the other. The line being only partially opened, the quantity of goods yet sent over the line is hardly worth mention, amounting to a few tons only in the course of a week. The business in coal, also, is only just getting into existence. The trains generally consist in whole of one first class carriage, one second ditto, one third ditto, and from four to six waggons loaded or empty, as above stated, the latter only passing over about half the length of the line now opened, that is, about six miles out of $11\frac{1}{2}$.

2. The trains leave Bolton at 8.45, 11.30, 2.45, and 6.30, and perform the distance between Bolton and Chorley, $11\frac{1}{2}$ miles, in about 35 or 40 minutes. The engine and carriages are turned round on their arrival at Chorley, and return without delay to Bolton; with a trifling exception as to one train on Tuesday mornings only, there are never two engines or trains working on the line at the same time.

3. All the carriages at present used on this line are hired from the Manchester and Bolton Railway Company, and their carriages are used indiscriminately upon both lines.

The third class carriages —

1. Are provided with springs, but no buffers.
2. They are entirely open.
3. The height of the framing or panelling is about four feet six inches, both at the ends and sides.
4. There are no partitions in the bodies.
5. They are considered capable of accommodating about 50, but it is very seldom that there are so many in one carriage on this line. Occasionally, however, unexpected numbers have come to intermediate stations where no extra carriages are kept; and, on New Year's Day, for instance, I understand that all the carriages of every class were loaded beyond their proper capacity; this, however, is of very rare occurrence.
6. There are no seats.
7. The waggons already alluded to are placed in the rear of the train for the purpose of facilitating their being detached, which is often done while the train is going at speed by a breaksmen, who remains upon the waggons when detached, and who stops them by the breaks at the coal staiths.

On Sundays, first and second class carriages only are used, but all passengers in the second class carriages on that day are charged third class fare only.

S. Laing, Esq.
&c. &c.

I am, &c.

PETER SINCLAIR.

No. 40.

BOLTON AND LEIGH RAILWAY.

No. 40.
Bolton and Leigh.

SIR,

Bolton, 4th January, 1842.

IN reply to your circular of the 1st instant, I beg to inform you that *no third class* passengers are, or ever have been, carried upon this line.

I am, &c.

S. Laing, Esq.
&c. &c.

PETER SINCLAIR, Treasurer.

No. 41.

LONDON AND BRIGHTON RAILWAY COMPANY.

No. 41.
London and
Brighton.

SIR,

4th January, 1842.

I HAVE the honour to acknowledge your communication received this morning, making certain inquiries relative to the working of luggage trains, &c., and in reply beg to say, for the information of the Lords of the Committee of Privy Council for Trade, that this Company are not yet in a position to carry goods on their line, nor do they carry any third class passengers. When either of those events take place they will have much pleasure in replying to your interrogatories.

I am, &c.

S. Laing, Esq.
&c. &c.

CHAS. R. MACKENZIE, Sec. pro tem.

VIII.—BYE-LAWS, RULES, ORDERS, &c.

Appendix.
 VIII.
 Bye-Laws, Rules,
 Orders, &c.
 No. 1.
 Birmingham and
 Derby Junction.

No. 1.

BIRMINGHAM AND DERBY JUNCTION RAILWAY.

AMENDED Copy of the Bye-Laws, Rules, and Orders of the Birmingham and Derby Junction Railway Company, made in pursuance of the Act incorporating the said Company, 6 Will. IV., c. 35.

1. No passenger will be allowed to take his seat in or upon any of the Company's carriages, or to travel therein upon the railway without having first booked his place and paid his fare. Each passenger booking his place will be considered as binding himself and agreeing to abide by and observe these bye-laws, orders, and regulations, so far as they concern himself. He will on booking his place be furnished with a ticket, which he is to show when required by the guard in charge of the train, and to deliver up prior to his quitting the Company's premises at the end of his journey, or at such other place as the Company or their agent may appoint. Any passenger refusing to produce on request, or at the end of his journey, to give up his ticket, will be required to pay the fare from the place whence the train originally started, or in default thereof is hereby made liable to a penalty of 40s., such penalty to be subject to reduction as hereinafter mentioned.

2. Passengers riding in a carriage of a superior class, having paid the fare for one of an inferior class, will be required to pay the difference of fare from the place whence they were booked, and if they refuse to pay such difference, they are hereby made liable to a penalty of 40s., subject to reduction as hereinafter mentioned.

3. Smoking is strictly prohibited, both in or upon the carriages, and in any of the Company's stations. Any passenger persisting in smoking after being warned not to do so, is hereby subjected to a penalty of 10s., subject to reduction as hereinafter mentioned, and in case of his persisting after a second warning, he will immediately (or if travelling, at the first stopping place) be removed from the Company's premises and forfeit his fare.

4. That all the penalties hereby imposed are and shall be subject to such reduction as the justice or justices before whom the same may be sought to be recovered shall think fit.

Dated January 20th, 1841.

THOMAS KELL, Secretary.

LETTER sent to the Secretary of the Birmingham and Derby Railway Company in answer to their Letter of the 1st instant regarding Bye-Laws.

SIR,

Board of Trade, 5th February, 1841.

IN reply to your letter of the 1st instant, I am directed by the Lords, &c. to inform you that they are pleased hereby to signify their allowance of the amended bye-laws of the Birmingham and Derby Railway Company. With reference to the first bye-law, which directs the ticket to be given up "at such place as the Company or their agent may appoint," their Lordships think that a specific notice of the time and place where the ticket will be demanded ought to be given to the public; and they direct me to inquire whether this is the case, and also what is the practice of the Company with regard to lost tickets.

Their Lordships also direct me to add that their confirmation of these bye-laws must be taken without prejudice to any steps which they may hereafter think it their duty to take for the purpose of ensuring greater uniformity in the bye-laws of railway companies generally.

I am, &c.

The Secretary to the Birmingham and
 Derby Junction Railway.

S. LAING.

STATING that the Company require the Tickets to be given up at the end of the Journey, or when demanded.

SIR,

Birmingham, 13th February, 1841.

REFERRING to my letter of the 4th instant, I am instructed to inform you, that on any future issue of tickets the Directors will cause the following note to be printed thereon:—

"This ticket to be given up when demanded at the end of the journey."

The practice of the Company in cases in which tickets are said to be lost is to require payment of the fare as if no ticket had been issued; and if on investigation it appears that such ticket has been issued, the amount of fare is returned to the party.

I have, &c.

S. Laing, Esq.,
 &c. &c.

THOMAS KELL, Secretary.

No. 2.

HULL AND SELBY RAILWAY.

COPY of the Bye-Laws of the Company.

Appendix.

VIII.

Bye-Laws, Rules,
Orders, &c.

No. 2.

Hull and Selby

SIR,

Trafalgar Hotel, Spring Gardens, London, March 9, 1841.

I BEG leave to send herewith a copy of the bye-laws of the Hull and Selby Railway Company, agreed to at a general meeting of the shareholders of the Company held on the 27th ultimo; and I shall feel obliged by your laying them before the Lords of the Committee of Trade, &c., and informing me as early as convenient whether they meet with their Lordships' approval.

I have, &c.

G. R. Porter, Esq.,
&c. &c.

GEORGE LOCKING, Secretary.

BYE-LAWS, Rules, and Orders, made by the Hull and Selby Railway Company, by virtue of the Powers and Provisions of an Act of Parliament passed in the Sixth Year of the reign of William the Fourth, intituled "An Act for making a Railway from Kingston-upon-Hull to Selby."

1. No person shall be allowed to travel upon the said railway without having previously paid his or her fare, and obtained a ticket from the booking-office.
2. If any passenger shall refuse to produce or deliver up his or her ticket when required so to do by the conductor, guard, or other officer of the Company attendant on the train, he or she shall be chargeable with the fare for the entire journey, and shall forfeit and pay a penalty not exceeding the sum of twenty shillings.
3. Passengers at the road stations will only be booked conditionally, that is to say, in case there shall be room in the train for which they are booked; and in case there shall not be room for all the passengers booked those booked for the longest distance shall have the preference, and those booked for the same distance shall have priority according to the order in which they are booked.
4. Any person riding in a first-class carriage having paid his fare for a second-class carriage only, or riding in a first or second-class carriage having paid his fare for a third-class carriage only, shall pay the difference in the respective fares as the case may be, and is also hereby made liable to a penalty not exceeding twenty shillings.
5. Every passenger will be allowed one hundred and twelve pounds weight of luggage free of charge; but the Company will not be responsible for the care of the same, unless booked and paid for accordingly. All surplus luggage, and merchandize of every description, will be charged for. The Company's porters will load and unload the luggage at the different stations free of charge.
6. No dogs will be permitted to accompany passengers in the carriages, but they will be conveyed separately and charged for.
7. Smoking is strictly prohibited both in the carriages and in the Company's stations. Any passenger persisting in smoking after being warned not to do so, is hereby subjected to a penalty not exceeding forty shillings; and in case of his persisting after a second warning, he will immediately, or, if travelling, at the first stopping place, be removed from the Company's premises and forfeit his fare.
8. If any passenger conducts himself improperly, or shall be intoxicated to the annoyance of the passengers, or wilfully obstruct any of the Company's officers in the discharge of their duty, he shall forfeit and pay any sum not exceeding the sum of forty shillings, and be immediately removed from the Company's premises or carriages, and shall forfeit any fare which he may have paid.
9. If any passenger shall wilfully damage any part of the Company's carriages, stations, or other property, he shall forfeit and pay any sum not exceeding the sum of five pounds over and above the cost of repairing such damage, and all incidental damage shall be paid for by the party committing the same.
10. If any passenger shall attempt to force his way into a carriage without having previously procured a ticket, or shall occupy (without permission) a superior class of carriage to that for which he has obtained a ticket, or shall continue his journey in the Company's carriages beyond the place for which he shall have paid his fare, he shall forfeit and pay a sum not exceeding the sum of forty shillings in addition to the full fare of the entire journey.
11. No fee or gratuity is permitted to be taken by any guard, porter, or other servant of the Company, under pain of immediate dismissal.

London, March 9, 1841.

I HEREBY certify that the foregoing is a true copy of the bye-laws, rules, and orders of the Hull and Selby Railway Company, made at the Annual General Meeting of the said Company, held at the Town Hall in Kingston-upon-Hull, on Saturday the 27th day of February last.

GEORGE LOCKING, Secretary.

Appendix.
 VIII.
 Bye-Laws, Rules,
 Orders, &c.
 No. 2.
 Hull and Selby.

LETTER sent to the Hull and Selby Railway Company relative to the Bye-Laws of the Company.

Board of Trade, March 12, 1841.

SIR,

WITH reference to your letter of the 9th March, enclosing a copy of the bye-laws, &c., of the Hull and Selby Railway Company, agreed to at the general meeting of the 27th ultimo, and soliciting an early consideration of them, I am directed, &c., to inform you—

1st. That the jurisdiction of the Board of Trade is confined to "Bye-Laws, &c., which impose penalties for the enforcement thereof upon persons other than servants of the Company."

2nd. That the second bye-law is objectionable, inasmuch as it imposes a fine in addition to payment of the whole fare in cases in which fraud might not be intended. Instead of the words "and shall forfeit," the words "or in default of payment thereof shall forfeit" ought to be substituted, in accordance with the similar bye-law of the London and Birmingham, and other Companies.

3rd. Bye-law four appears inconsistent with bye-law ten, in providing a different penalty for the same offence, viz., that of occupying a superior class of carriage to that for which fare is paid, and omitting the words "without permission," which are properly inserted in the latter bye-law. Subject to these exceptions I am directed to inform you that their Lordships approve of the bye-laws, &c., submitted to them. With regard to the second and fourth, if the Directors will frame regulations at their next meeting in accordance with the above suggestions, and transmit them to the Board of Trade, no time will be lost in conveying the approval which is necessary to give them validity.

I am, &c.

The Secretary of the Hull and Selby Railway Company.

S. LAING.

IN Reply to Letter from this Office of the 12th instant, and transmitting Copy of the Bye-Laws of the Company.

SIR,

Railway Office, Hull, March 16, 1841.

I beg to acknowledge the receipt of your favour of the 12th instant, suggesting alterations in the bye-laws submitted to the Lords of the Committee of Privy Council for Trade for their approval.

The Directors of the Company were holding a meeting at the time your letter was received, and which I immediately laid before them, and the alterations suggested were immediately adopted; and in accordance with a resolution of the Directors, another copy of the bye-laws was prepared, which I beg leave to enclose, and shall feel obliged by your laying them before the Lords of the Committee of Privy Council for Trade, and transmitting me the decision of their Lordships respecting them at your earliest convenience.

I have, &c.

S. Laing, Esq.,
 &c. &c.

GEORGE LOCKING, Secretary.

BYE-LAWS, Rules, and Orders, made by the Hull and Selby Railway Company by virtue of the Powers and Provisions of an Act of Parliament passed in the Sixth Year of the reign of King William the Fourth, intituled "An Act for making a Railway from Kingston-upon-Hull to Selby."

1. No person shall be allowed to travel upon the said railway without having previously paid his or her fare, and obtained a ticket from the booking-office.

2. If any passenger shall refuse to produce or deliver up his or her ticket when required so to do by the conductor, guard, or other officer of the Company attendant on the train, he or she shall be chargeable with the fare for the entire journey, *or in default of payment thereof shall forfeit and pay a penalty not exceeding the sum of twenty shillings.*

3. Passengers at the road stations will only be booked conditionally, that is to say, in case there shall be room in the train for which they are booked; and in case there shall not be room for all the passengers booked, those booked for the longest distance shall have the preference; and those booked for the same distance shall have priority according to the order in which they are booked.

4. Any person riding in a first-class carriage having paid his fare for a second-class carriage only, or riding in a first or second-class carriage having paid his fare for a third-class carriage only, (*without permission*,) shall pay the difference in the respective fares, as the case may be, and is also hereby made liable to a penalty not exceeding twenty shillings.

5. Every-passenger will be allowed one hundred and twelve pounds weight of luggage free of charge; but the Company will not be responsible for the care of the same, unless booked and paid for accordingly. All surplus luggage, and merchandize of every description, will be charged for. The Company's porters will load and unload the luggage at the different stations free of charge.

6. No dogs will be permitted to accompany passengers in the carriages; but they will be conveyed separately, and charged for.

7. Smoking is strictly prohibited both in the carriages and in the Company's stations. Any passenger persisting in smoking, after being warned not to do so, is hereby subjected to a penalty not exceeding forty shillings; and in case of his persisting after a second warning, he

will immediately, or, if travelling, at the first stopping place, be removed from the Company's premises and forfeit his share.

8. If any passenger conducts himself improperly, or shall be intoxicated to the annoyance of the passengers, or wilfully obstruct any of the Company's officers in the discharge of their duty, he shall forfeit and pay any sum not exceeding the sum of forty shillings, and be immediately removed from the Company's premises or carriages, and shall forfeit any fare which he may have paid.

9. If any passenger shall wilfully damage any part of the Company's carriages, stations, or other property, he shall forfeit and pay any sum not exceeding the sum of five pounds over and above the cost of repairing such damage, and all incidental damage shall be paid for by the party committing the same.

10. If any passenger shall attempt to force his way into a carriage without having previously procured a ticket, or shall occupy (without permission) a superior class of carriage to that for which he has obtained a ticket, or shall (*without permission*) continue his journey in the Company's carriages beyond the place for which he shall have paid his fare, he shall forfeit and pay a sum not exceeding the sum of *twenty shillings* in addition to the full fare of the entire journey.

11. No fee or gratuity is permitted to be taken by any guard, porter, or other servant of the Company, under pain of immediate dismissal.

Appendix.

VIII.

Bye-Laws, Rules,
Orders, &c.

No. 2.

Hull and Selby.

Hull, March 13, 1841.

I HEREBY certify that the foregoing is a true copy of the Bye-Laws, Rules, and Orders of the Hull and Selby Railway Company, as amended pursuant to the suggestions of the Lords of the Committee of Privy Council for Trade, and agreed to at a meeting of the Directors of the said Company held at the Railway Office, in Kingston-upon-Hull, on Saturday the 13th day of March instant.

GEORGE LOCKING, Secretary.

LETTER sent to the Hull and Selby Railway Company, approving of the Bye-Laws as amended 13th March.

SIR,

Board of Trade, March 17, 1841.

I AM directed, &c., to inform you that their Lordships approve of the bye-laws of the Hull and Selby Railway Company, as amended at the meeting of the Directors on the 13th of March.

I am, &c.

S. LAING.

The Secretary of the Hull and Selby Railway Company.

No. 3.

NEWCASTLE AND CARLISLE RAILWAY.

COPY of the Bye-Laws of the Company.

No. 3.
Newcastle and
Carlisle.

MY LORDS,

Newcastle-upon-Tyne, April 3, 1841.

I HAVE the honour to transmit for the sanction of your Lordships the code of bye-laws which we made and agreed to at the Annual General Meeting of the Shareholders of the Newcastle-upon-Tyne and Carlisle Railway Company, held at Newcastle-upon-Tyne on the 26th day of March last.

I have, &c.

The Lords of the Committee of Privy
Council for Trade.

JOHN ADAMSON,
Clerk to the Company.

BYE-LAWS, Orders, and Regulations

MADE in pursuance and exercise of the powers contained in an Act of Parliament passed in the tenth year of the reign of His Late Majesty King George the Fourth, intituled "An Act for Making and Maintaining a Railway or Tram-road from the Town of Newcastle-upon-Tyne, in the County of the Town of Newcastle-upon-Tyne, to the City of Carlisle, in the County of Cumberland, with a branch thereof," at the Annual General Meeting of the Shareholders, held at the Assembly Rooms in Newcastle-upon-Tyne the 26th day of March, 1841.

1. That no person shall be allowed to travel upon the Newcastle-upon-Tyne and Carlisle Railway, or any part thereof, without first having paid the proper fare, and received a ticket.

2. That if any passenger shall refuse to produce or deliver up his ticket, when required so to do by the conductor, guard, or other servant of the Company, he shall be chargeable with the fare for the entire journey, and shall forfeit and pay the sum of 20s.

3. That every passenger shall be allowed 84 pounds of luggage, free of charge; but the Company will not be responsible for the care of the same, unless booked and paid for accordingly. And that all surplus luggage and merchandize of every description shall be charged for.

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4. That no dogs shall be permitted to accompany passengers in the carriages; but they shall be conveyed separately, and charged for.
5. That no smoking shall be allowed in any of the carriages or stations of the Company, and any person so offending shall forfeit and pay the sum of 5s., and be liable to be removed from the Company's premises or carriages.
6. That if any passenger or passengers conduct themselves improperly, or shall be intoxicated, so as to cause annoyance, or shall wilfully obstruct any of the Company's officers in the discharge of their duty, they shall forfeit and pay the sum of 10s., and be immediately removed from the Company's premises or carriages, and shall forfeit any fare which they may have paid.
7. That any passenger who shall wilfully damage any part of the Company's carriages, stations, or other property, shall forfeit and pay any sum not exceeding the sum of 20s., over and above the cost of repairing such damage, and all accidental damage shall be paid for by the party causing the same.
8. That if any passenger or passengers shall attempt to force their way into a carriage without having previously procured a ticket, or shall occupy (without permission) a superior class to that for which he has obtained a ticket, or shall continue his journey in the Company's carriages beyond the place for which he shall have paid his fare, he shall forfeit and pay the sum of 20s. in addition to the full fare of the entire journey.
9. That no fee or gratuity shall be taken by any guard, porter, or other servant of the Company, under pain of immediate dismissal.
10. That all goods received by the Newcastle-upon-Tyne and Carlisle Railway Company are and shall be received on the following terms and conditions: viz., that they shall be subject to a general lien for money due to the Company, not only for carriage of such good, and for wharfage and warehouse rent, but also for the general balance owing to the said Company. And in case such general lien is not satisfied within 21 days from the time the Company shall first receive the goods, the same may then be sold by auction or otherwise, and the proceeds applied to the satisfaction of such general lien and expenses. And the said Company will not be accountable for any loss or damage to any goods in their hands, as carriers, or in their warehouses, or upon their landing places, arising from fire, tempest, or civil commotion; neither will they be responsible for goods packed in insufficient packages, or for leakage, arising from bad casks or bad cooperage, or for loss of aqua fortis, oil of vitriol, or any ardent spirit or dangerous article; and senders of such articles will be held accountable for any damage arising therefrom, unless the contents be described on the direction, that due care may be observed in loading. Nor will the Company be responsible for the loss of, or damage done to, money in cash or bills, or other valuable, or for damages done to hazardous or brittle articles, unless the same be ensured and paid for at the time of delivery. And the said Company shall not be liable for loss, damage, or deficiency of any sort, from whatever cause arising, unless notice in writing of the claim be given to the said Company within three days after the delivery of the goods, or within three day after notice shall have been given to the party to whom they are addressed of their arrival at any station of the Company.

LETTER sent to the Newcastle and Carlisle Railway Company, in reply to Letter of the 3rd April, relative to the Bye-Laws of the Company.

SIR,

Board of Trade, Whitehall, 13th April, 1841.

WITH reference to your letter of the 3rd April, &c., submitting a copy of bye-laws, &c., made at a general meeting of the Newcastle and Carlisle Railway Company, on the 26th of March, 1841, I am directed, &c., to make the following observations:—

1st. The jurisdiction of their Lordships over the bye-laws of railway companies, under Lord Seymour's Act, 3 and 4 Vic., c. 97, extends only to such bye-laws as "impose penalties for the enforcement thereof upon persons other than the servants of the said companies."

2nd. The second bye-law subjects any passenger, failing to produce his ticket when required by any servant of the Company, to payment of the entire fare and an additional fine 20s. Their Lordships cannot allow a bye-law so much more stringent than that in force upon other railways for the same purpose, and which, if strictly enforced, might subject the public using the railway to oppression. The corresponding bye-law of the London and Birmingham Railway Company, which is in very general use upon other railways, is to the following effect:—"That if any passenger shall refuse to produce his ticket when required by the guard in charge of the train, and to deliver it up prior to his quitting the Company's premises at the end of his journey, he shall be chargeable with the fare from the place where the train originally started, or in default thereof is hereby made liable to a penalty of . . ." If this bye-law should not appear to the Directors of the Newcastle and Carlisle Railway Company to be applicable to the circumstances of their line, their Lords, &c., must at any rate insist upon the proposed bye-law being modified so as to define the servant to whom the ticket is to be given up, as a servant "properly authorized by the Company in that behalf;" and upon the fine being made alternative, on refusal to pay the fare, instead of absolute. Their Lordships further wish me to call the attention of the Directors to the circumstance, that upon the principal passenger-railways a discretionary power is given to some superior officer at each station to remit the payment required by this bye-law in cases in which he is satisfied that the ticket has been really lost, and that no intention to defraud exists.

3rd. Bye-law 5, instead of the words, "any person so offending," the words "any person persisting in smoking after being warned not to do so," ought to be used in conformity with

the similar bye-law usual upon other railways, unless the Directors can show some special reasons rendering the more stringent provision necessary in their case.

4th. Bye-law 6. The object of this bye-law is quite proper, but the language appears, in some respects, open to objection, especially with regard to the wilful obstruction of the Company's officers in the discharge of their duty, for which offence a specific punishment has been already provided by the legislature, 3 and 4 Vic., c. 97, s. 16. The following bye-law, framed upon that in general use upon other railways, is suggested as an improvement:—
 "Any passenger in a state of intoxication committing any nuisance, or wilfully interfering with the comfort of other passengers, attempting to force his way into a carriage without having previously procured a ticket, or not attending to the directions of the Company's officers in cases in which the personal safety of himself or any of the passengers is concerned, will be removed from the Company's premises immediately, or as soon after the offence as conveniently may be, and shall forfeit his fare and a penalty of ."

Note.—By Lord Seymour's Act, 3 and 4 Vic. c. 97, s. 16, any person wilfully obstructing any officer of the Company in the "discharge of his duty, shall and may be apprehended forthwith and taken before a justice, and is liable, on conviction, to a fine not exceeding 5*l.*, and, in default of payment, to imprisonment for a term not exceeding two calendar months."

5th. Bye-law 8. The first part, relating to attempts to force a way into carriages, has been transferred to bye-law 6, having more relation with the cases of criminal misconduct enumerated in that bye-law than with cases of fraud. The bye-law would then run thus:—
 That if any passenger "shall (without permission) occupy, &c., or continue, &c." The words, without permission, ought of course to apply to both cases.

Their Lordships direct me to state, that if the first nine bye laws are amended in conformity with the above suggestions, and an amended copy submitted to them, no time will be lost in conveying their Lordships' confirmation so as to give them effect.

With regard to the tenth bye-law, it does not appear to be one which requires their Lordships' confirmation, as it imposes no penalty. The legality, however, of such a bye-law under the Carriers' Act, and the provisions of the Company's Act of incorporation, which requires all bye-laws to be conformable to the law of the land, appears questionable. This point, however, involves too many legal questions for their Lordships to pronounce an opinion upon it without mature consideration, and they wish, in the first place, to be informed in what capacity the Newcastle and Carlisle Company act with regard to the carriage of goods, whether as common carriers, including delivery, &c., or merely as proprietors of the railway and providers of locomotive power.

I am, &c.,
 S. LAING.

The Clerk of the Newcastle-upon-Tyne and Carlisle
 Railway Company.

TRANSMITTING Copy of the Bye-Laws, &c., of the Company.

Newcastle-upon-Tyne and Carlisle Railway Office,
 Forth, Newcastle-upon-Tyne, 10th May, 1841.

SIR,

I now enclose, for the sanction of their Lordships, the code of bye-laws as altered according to the suggestions contained in your letter of the 13th April, as far as the circumstances will admit, and which were, as so altered, agreed to at an adjournment of the meeting at which they were originally passed; and I also send the copy which was before their Lordships, that they may see what alterations have been made.

The last bye-law, in consequence of the observations contained in your letter, has been withdrawn.

I am desired to inform their Lordships, that our railway is different in several respects from others; that in consequence of a number of fairs taking place, hiring of servants, and the description of a great number of the passengers, added to the stations not being enclosed as is the case upon the railways in the South, it would be almost impossible for one person to see that all the tickets were collected. We have, therefore, inserted that the other person must be qualified; and, should the law be permitted to stand as now put, a written authority to make the demand shall be given to the assistant of the agent at the station house. The fare for a person who would so conduct himself being very low, the punishment of paying the whole of it would not be too great.

I am, &c.,
 JOHN ADAMSON, Clerk to the Company.

S. Laing, Esq.,
 &c. &c.

BYE-LAWS, ORDERS, and REGULATIONS, made in pursuance and exercise of the powers contained in an Act of Parliament, passed in the tenth year of the reign of His late Majesty King George the Fourth, intituled "An Act for making and maintaining a Railway or Tram Road from the Town of Newcastle-upon-Tyne, in the County of the Town of Newcastle-upon-Tyne, to the City of Carlisle, in the County of Cumberland, with a Branch therout," at the Annual General Meeting of the Shareholders, held at the Assembly Rooms, in Newcastle-upon-Tyne, the 26th day of March, 1841:—

1. That no person shall be allowed to travel upon the Newcastle-upon-Tyne and Carlisle Railway, or any part thereof, without first having paid the proper fare and received a ticket.
2. That if any passenger shall refuse to produce or deliver up his ticket, when required so to do by the conductor, guard, or other servant of the Company, authorized in that behalf,

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he shall be chargeable with the fare for the entire journey, or shall forfeit and pay the sum of 20s., at the option of the Directors, for the time being, of the said Company.

3. That every passenger shall be allowed 84 lbs. of luggage, free of charge, but the Company will not be responsible for the care of the same unless booked and paid for accordingly. And that all surplus luggage, and merchandize of every description, shall be charged for.

4. That no dogs shall be permitted to accompany passengers in the carriages, but they shall be conveyed separately and charged for.

5. That no smoking shall be allowed in any of the carriages or stations of the Company, and any person persisting in smoking after being warned not to do so, shall forfeit and pay the sum of 5s., and be liable to be removed from the Company's premises or carriages.

6. That if any passenger or passengers shall forcibly enter any of the Company's carriages without having obtained a proper ticket, or being intoxicated, or shall conduct himself so as to cause annoyance to his fellow passengers, or shall disobey the orders of the Company's officers in cases in which the personal safety of himself or his fellow passengers is concerned, shall forfeit and pay the sum of 10s. and be immediately removed from the Company's premises or carriages, and shall forfeit any fare which he may have paid.

7. That any passenger who shall wilfully damage any part of the Company's carriages, stations, or other property, shall forfeit and pay any sum not exceeding the sum of 20s. over and above the cost of repairing such damage, and all accidental damage shall be paid for by the party causing the same.

8. That if any passenger or passengers shall occupy (without permission) a superior class to that for which he has obtained a ticket, or shall (without permission) continue his journey in the Company's carriage beyond the place for which he shall have paid his fare, he shall forfeit and pay the sum of 20s. in addition to the full fare of the entire journey.

9. That no fee or gratuity shall be taken by any guard, porter, or other servant of the Company, under pain of immediate dismissal.

LETTER sent to the Newcastle and Carlisle Railway Company, approving the new Code of Bye-Laws of the Company.

SIR,

Board of Trade, Whitehall, 12th May, 1841.

I AM directed, &c., to signify to you their Lordships' approval of the amended copy of bye-laws of the Newcastle-upon-Tyne and Carlisle Railway Company, enclosed in your letter of the 10th instant.

With reference to the second bye-law, their Lordships direct me to observe, that their confirmation is given on the understanding, that the alternative of suing for the penalty is only meant to be enforced in cases where the intention to defraud is manifest.

Newcastle-upon-Tyne and Carlisle
Railway Company.

I am, &c.,
S. LAING.

No. 4.

No. 4.
Northern and
Eastern.

NORTHERN AND EASTERN RAILWAY.

TRANSMITTING Copy of the Bye-Laws of the Company.

MY LORDS,

Office, High Street, Shoreditch, June 17, 1841.

I HAVE the honour to enclose herein, for your Lordships' approbation, the draft of a code of bye-laws agreed to at a special general meeting of the proprietors of this Company, held yesterday; and as some inconvenience will be felt by the Company till these bye-laws are allowed to come into force, the Directors will feel greatly obliged by the honour of your Lordships signifying your approbation thereof at the earliest possible period.

I have, &c.

To the Right Hon. the Lords of the Committee
of Privy Council for Trade.

WILLIAM BOURNE, Secretary.

DRAFT of Bye-Laws.

No person shall travel on the railway without first having paid his fare and received a ticket, which is to be shown when required to the conductor or guard, or other attendant on the train, and to be delivered up before quitting the Company's premises at the end of the journey. And any person travelling without a ticket, or refusing to produce or deliver it up as above, or using without leave a carriage of a superior class to that for which he has been booked, or continuing his journey beyond the place for which he has been booked, shall be charged the full fare for the whole journey in addition to what he may have paid, and shall be liable also to a penalty not exceeding 40s.

Any persons smoking, either in the carriages or stations, shall be subject to a penalty not exceeding 40s., and be liable to be removed from the stations or from the carriages on their arrival at any station.

Any person conducting himself improperly, or being intoxicated to the annoyance of the passengers, or obstructing any of the Company's officers or servants in the discharge of their duty, shall be immediately removed from the Company's premises or carriages, and be subject to a penalty not exceeding 40s. in addition to the forfeiture of any fare that may have been paid.

Any person wilfully damaging any part of the carriages, stations, or premises shall be liable to a penalty of 5*l.* in addition to the cost of repairing the damage done.

All accidental damage to be paid for by the party causing the same.

Dogs not to be permitted to accompany passengers in the carriages, but to be conveyed separately and charged for.

Each first-class passenger to be allowed 112*lbs.*, and each second or third-class passenger 56*lbs.* of luggage free of charge, but the Company are not answerable for the care of luggage unless booked and paid for; and all surplus luggage as well as merchandize of every description to be charged for.

At the intermediate stations passengers to be booked only conditionally on their being room in the carriages by the train.

At a special general meeting of the proprietors of the Northern and Eastern Railway Company, held at the London Tavern Bishopsgate-street, on Wednesday, the 16th of June, 1841, the foregoing Draft of Bye-laws were submitted, and unanimously agreed to, and resolved, that the Company's seal be attached thereto.

WILLIAM BOURNE, Secretary.

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VIII.
Bye-Laws, Rules,
Orders, &c.
No. 4.
Northern and
Eastern.

LETTER sent to the Northern and Eastern Railway Company in reply to their Letter of the 17th, also confirming their Bye-Laws provisionally.

SIR,

Board of Trade, Whitehall, June 18, 1841.

I AM directed, &c., to acknowledge the receipt of your letter of the 17th June, enclosing a draft of a copy of bye-laws agreed to at a meeting of the proprietors of the Northern and Eastern Railway Company, held on the 16th instant.

I am directed by their Lordships to state that the first bye-law appears objectionable, inasmuch as it subjects a passenger who may have lost his ticket to a fine in addition to payment of the full fare. The fine in this case ought to be alternative on refusal to pay the fare, as is the case in the bye-laws of the London and Birmingham and other leading Companies.

It is also usual with these Companies to empower some superior officer at each station to exercise a discretion in remitting the payment of the fare in cases in which he is satisfied that the ticket is really lost, and that no fraud is intended.

Their Lordships also observe that the words "without leave," ought to be inserted between the words "journey," and "beyond."

The second bye-law against smoking is more severe than that usually adopted, which only imposes a penalty on persisting in smoking after having been requested to desist, and their Lordships think that the usual form should be adopted unless there are some special reasons to render the other necessary.

Subject to these remarks their Lordships see no objection to the code, and as it is stated to be an object to the Company to have it in force without delay they direct me to signify their confirmation, on condition of receiving an assurance from the Directors that the points above specified shall be amended at the earliest opportunity, and that in the mean time the suggestions above made, especially that relative to lost tickets, shall be attended to.

I am, &c.

S. LAING.

The Secretary of the
Northern and Eastern Railway Company.

IN reply to Letter from this Office of the 18th June, and promising to comply with the Suggestions therein contained relative to the Bye-laws of the Company.

SIR,

Office, High Street, Shoreditch, June 21, 1841.

I HAVE had the honour to receive your letter of the 18th instant, stating that the Lords the Committee of Privy Council for Trade are pleased to confirm a code of bye-laws transmitted to them in my letter of the 17th instant, subject to certain suggestions contained in your said letter, and on the condition of receiving an assurance that they shall be amended at the earliest opportunity. And I am instructed by the Board of Directors of this Company to inform you, that they will rigidly adopt the suggestions made by their Lordships; and that the code shall be amended in conformity therewith at the half-yearly meeting of the proprietors of the Company, which will take place in August next.

I have, &c.

S. Laing, Esq.,
&c. &c.

WILLIAM BOURNE, Secretary.

TRANSMITTING Copy of the Bye-Laws of the Company; also Copy of Instructions to the Servants of the Company.

MY LORDS,

Office, High Street, Shoreditch, August 27, 1841.

I HAVE the honour to enclose herein a copy of the bye-laws adopted at a half-yearly general meeting of the proprietors of this Company, held on the 12th instant.

Your Lordships will be pleased to observe that the various amendments required by your Lordships' letter of the 18th of June last have been introduced therein.

I have, &c.

To the Right Hon. the Lords of the Committee
of Privy Council for Trade.

WILLIAM BOURNE, Secretary.

I likewise enclose a copy of the Company's instructions to their officers, in connexion with the bye-laws.

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BYE-LAWS of the Northern and Eastern Railway.

No person shall travel on the railway without first having paid his fare and received a ticket which is to be shown when required to the conductor, guard, or other attendant on the train, and to be delivered up before quitting the Company's premises at the end of the journey; and any person travelling without a ticket, or refusing to produce or to deliver it up as above, or using without leave a superior carriage to that for which he has been booked, or continuing his journey without leave beyond the place for which he has been booked, shall be charged the full fare for the whole journey in addition to what he may have paid, and (except in cases of tickets shown to have been lost) be liable also to a penalty not exceeding 40s.

Any person smoking either in the carriages or stations shall (on refusing to desist) be subject to a penalty not exceeding 40s., and be liable to be removed from the stations or from the carriages on arrival at any station.

Any person conducting himself improperly, or being intoxicated to the annoyance of the passengers, or obstructing any of the Company's officers or servants in the discharge of their duty, shall be immediately removed from the Company's premises or carriages, and be subject to a penalty not exceeding 40s. in addition to the forfeiture of any fare that may have been paid.

Any person wilfully damaging any part of the carriages, stations, or premises, shall be liable to a penalty of 5*l.* in addition to the cost of repairing the damage done. All accidental damage to be paid for by the party causing the same.

Dogs not to be permitted to accompany passengers in the carriages, but to be conveyed separately and charged for.

Each first-class passenger to be allowed 112 lbs., and each second and third-class passenger 56 lbs. of luggage free of charge, but the Company will not be answerable for the care of luggage unless booked and paid for, and all surplus luggage as well as merchandize of every description, to be charged for.

At the intermediate stations passengers to be booked only conditionally on there being room in the carriages by the train.

COPY of Instructions sent to the respective Stations' Clerks on the Line of the Northern and Eastern Railway.

SIR,

Office, High Street, Shoreditch, August 13, 1841.

HEREWITH you will receive a copy of the bye-laws of this Company which have been sanctioned by the proper authorities. You will post this in the office, and there is a copy written on a board to be placed conspicuously on the platform of the station under your charge.

In carrying these laws into effect when necessary to have recourse to them you will attend to the following instructions, and you will also bear in mind generally that their main object is not the punishment of offending parties, but the protection on the one hand of fellow passengers from annoyance, and on the other hand of the Company from the loss of custom that would follow such annoyance if permitted, as well as the more direct loss arising from imposition or fraud.

You will observe that penalties are attached in certain cases, but it is not intended that you should on any occasion enforce them. Should anything occur of such a nature as in your judgment to require such an extreme course, you will immediately report to me, and if approved, the necessary steps will be taken by the proper officer.

In the case of tickets alleged to have been lost, you will exercise your discretion under the circumstances, and if you see good ground for believing that such has been the case, you will not enforce the charge again; but I need not point out to you that this discretion must be exercised with great caution, as several instances of evasion in this way have been attempted and detected, and you will report to me in all cases when you have made the remission. So also with parties travelling further than they have been booked for, you will charge them an excess fare, sufficient only to make up the whole fare of the journey, unless from the recurrence of the irregularity with the same parties, or the practice becoming general, or otherwise you have reason to believe some imposition is intended, in which case you will exact the whole fare of the journey, without any abatement for what may have been paid on the short ticket; but whenever practicable, you will communicate with me before having recourse to this, and when you do so on your own responsibility you will immediately report it.

In case of determined opposition being offered to you in the discharge of your duty under the above directions, the remedy is the detention of the party; but this is the last resource, and must never be had recourse to, if he be known to you, or be vouched for by any respectable person known to you, or when you feel assured he will appear to meet any proceedings that may be taken against him.

I have, &c.

WILLIAM BOURNE, Secretary.

LETTER sent to the Northern and Eastern Railway Company confirming the Bye-Laws of the Company, &c.

SIR,

Board of Trade, Whitehall, August 30, 1841.

I AM directed, &c. to signify their Lordships' approbation of the bye-laws, imposing penalties for the enforcement thereof upon persons other than servants of the Company, adopted at the half-yearly general meeting of the proprietors of the Northern and Eastern Railway Company, held on the 12th August.

The Secretary of the
Northern and Eastern Railway Company.

I am, &c.

S. LAING.

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VIII.

Bye-Laws, Rules,
Orders, &c.

No. 4.

Northern and
Eastern.

No. 5.

LONDON AND BRIGHTON RAILWAY.

TRANSMITTING a Copy of the Bye Laws of the Company.

SIR,

10, Angel Court, Throgmorton Street, July 16, 1841.

I HAVE now to transmit to you a copy of the bye laws proposed for the regulation of the Company, and to which I shall be glad to have their Lordships' approval as early as possible.

I have, &c.

S. Laing, Esq.
&c. &c.

THOS. WOOD, Secretary.

THE BYE LAWS of the London and Brighton Railway Company.

1. No person will be allowed to travel upon the railway without first having paid his fare and received a ticket.

2. If any passenger shall refuse to produce or deliver up his ticket when required so to do by the conductor, guard, or other attendant on the train, he shall be chargeable with the fare for the entire journey, and shall forfeit and pay a sum not exceeding the sum of forty shillings.

3. Every first-class passenger will be allowed 112 lbs. and every second-class passenger 56 lbs. of luggage, free of charge; but the Company will not be responsible for the care of the same unless booked and paid for accordingly. All surplus luggage and merchandize of every description will be charged for. The Company's porters will load and unload the luggage at the different stations free of charge.

4. No dogs will be permitted to accompany passengers in the carriages; but they will be conveyed separately and charged for.

5. No smoking will be allowed in any of the carriages or stations of the Company, and any person so offending shall forfeit and pay any sum not exceeding the sum of forty shillings, and be liable to be removed from the Company's premises or carriages.

6. If any passenger conducts himself improperly, or shall be intoxicated to the annoyance of the passengers, or wilfully obstruct any of the officers in the discharge of their duty, he shall forfeit and pay any sum not exceeding the sum of forty shillings, and be immediately removed from the Company's premises or carriages, and shall forfeit any fare which he may have paid.

7. If any passenger shall wilfully damage any part of the Company's carriages, stations, or other property, he shall forfeit and pay any sum not exceeding the sum of five pounds over and above the cost of repairing such damage, and all accidental damage shall be paid for by the party committing the same.

8. If any passenger shall attempt to force his way into a carriage, without having previously procured a ticket, or shall occupy (without permission) a superior class to that for which he has obtained a ticket, or shall continue his journey in the Company's carriages beyond the place for which he shall have paid his fare, he shall forfeit and pay a sum not exceeding the sum of forty shillings, in addition to the full fare of the entire journey.

9. Every train is provided with guards and a conductor, who is responsible for the order and regularity of the journey.

10. No fee or gratuity is permitted to be taken by any guard, porter, or other servant of the Company, under pain of immediate dismissal.

By Order,

THOS. WOOD, Secretary.

LETTER sent to the London and Brighton Railway Company, in reply to their Letter of the 16th July, and confirming the Company's Bye Laws provisionally.

SIR,

Board of Trade, July 31, 1841.

I AM directed, &c., to signify their approval of the bye laws of the London and Brighton Railway Company, transmitted in your letter of the 16th July, subject to the following remarks:—

1st. The second bye law would, if strictly construed, subject a passenger losing his ticket to a fine, in addition to payment of the entire fare. In the bye laws of the London and Birmingham, and other leading Railways, the fine is only imposed as a penalty on refusal to pay

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the fare, if unable to produce a ticket; and their Lordships are of opinion that this is the proper rule, and that the bye law in question should be altered by the substitution of the word "or" for "and" before the words "shall forfeit and pay, &c." Their Lordships also wish to call the attention of the Directors to the practice very properly observed upon other leading railways of having a proper person at each station where tickets are collected, authorized to exercise a discretion in remitting the payment of fare required by this bye law in cases in which he is satisfied that the ticket has been really lost, and that no intention to defraud exists.

Their Lordships further observe that the words "or other attendant on the train" are too indefinite, and they suggest the substitution of the words "or other person duly authorized by the Company in that behalf."

2nd. The fine on smoking is usually made alternative on refusing to desist when required. Their Lordships, however, will not disallow the proposed bye law if the Directors think it desirable, and if due notice against smoking is affixed conspicuously at the stations and in the carriages.

3rd. Bye laws 6 and 8. The attempt to force a way into a carriage appears to belong more properly to the class of officers enumerated in bye law 6, than to those in bye law 8, which are cases of fraud. It should be transferred to bye law 6, and a notice subjoined to that bye law that in case the obstruction or misconduct is such as to endanger safety, the penalties of Lord Seymour's Act, 3 and 4 Vic., c. 97, will apply, and will be strictly enforced.

In bye law 8 the words "without permission" should be inserted after the word "continue."

If the alterations and suggestions above mentioned are complied with, their Lordships have no objection to give their immediate confirmation to the bye laws of the Company.

I am, &c.

T. Wood, Esq.
&c. &c.

S. LAING.

TRANSMITTING Copy of an amended Code of Bye Laws.

SIR,

10, Angel Court, Throgmorton Street, August 14, 1841.

AGREEABLY with the suggestions of the Lords of the Committee of Privy Council for Trade, as communicated by your favour of 31st ult., the Board of Directors of this Company have amended the code of bye laws, as per copy, which I herewith transmit, and which they trust will meet the approval of their Lordships.

I am, &c.

S. Laing, Esq.
&c. &c.

THOS. WOOD, Secretary.

THE Bye Laws of the London and Brighton Railway Company.

1. No person will be allowed to travel upon the railway without first having paid his fare and received a ticket.

2. If any passenger shall refuse to produce or deliver up his ticket, when required so to do by the conductor, guard, or other person duly authorized by the Company in their behalf, he shall be chargeable with the fare for the entire journey, or shall forfeit and pay a sum not exceeding the sum of forty shillings.

3. Every first-class passenger will be allowed 112 lbs. and every second-class passenger 56 lbs. of luggage, free of charge; but the Company will not be responsible for the care of the same unless booked and paid for accordingly. All surplus luggage and merchandize of every description will be charged for. The Company's porters will load and unload the luggage at the different stations free of charge.

4. No dogs will be permitted to accompany passengers in the carriages, but they will be conveyed separately and charged for.

5. No smoking will be allowed in any of the carriages or stations of the Company, and any person so offending shall forfeit and pay any sum not exceeding the sum of forty shillings, and be liable to be removed from the Company's premises or carriages.

6. If any passenger conducts himself improperly, or shall attempt to force his way into a carriage without having previously procured a ticket, or shall be intoxicated to the annoyance of the passengers, or wilfully obstruct any of the officers in the discharge of their duty, he shall forfeit and pay any sum not exceeding the sum of forty shillings, and be immediately removed from the Company's premises or carriages, and shall forfeit any fare which he may have paid.

7. If any passenger shall wilfully damage any part of the Company's carriages, stations, or other property, he shall forfeit and pay any sum not exceeding the sum of five pounds over and above the cost of repairing such damage, and all accidental damage shall be paid for by the party committing the same.

8. If any passenger shall occupy (without permission) a superior class to that for which he has obtained a ticket, or shall continue (without permission) his journey in the Company's carriages beyond the place for which he shall have paid his fare, he shall forfeit and pay a sum not exceeding the sum of forty shillings, in addition to the full fare of the entire journey.

9. Every train is provided with guards and a conductor, who is responsible for the order and regularity of the journey.

10. No fee or gratuity is permitted to be taken by any guard, porter, or other servant of the Company, under pain of immediate dismissal.

No. 6.

SHEFFIELD, ASHTON-UNDER-LYNE, AND MANCHESTER RAILWAY.

TRANSMITTING Copy of the Rules and Regulations of the Company.

MY LORDS,

Manchester, 12th November, 1841.

As the clerks and solicitors of the Sheffield, Ashton-under-Lyne, and Manchester Railway Company, we, pursuant to the instructions of the Board of Directors, beg leave to lay before your Lordships a copy of the Orders and Regulations (which on the 3rd instant received the sanction of the Board) applicable to the travelling on the line of railway and which in certain cases impose penalties on persons not the servants of the Company.

We have, &c.

BAGSHAW and STEVENSON.

The Lords of the Committee of Her Majesty's Privy Council
for Trade and Foreign Plantations.

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Bye-Laws, Rules,
Orders, &c.

No. 6.

Sheffield, Ashton-
under-Lyne, and
Manchester.

RULES and REGULATIONS.

By virtue of the powers of an Act of Parliament passed in the seventh year of the reign of King William IV. intituled "An Act for making a Railway from Sheffield, in the West Riding of the County of York, to Manchester, in the County of Lancaster," the following Orders and Regulations are made and passed :—

1. No person will be allowed to travel upon the railway without first having paid his fare and received a ticket.

Passengers at the intermediate or road stations will only be booked conditionally (that is to say) in case there shall be room in the train for which they shall be booked; and in case there shall not be room, passengers booked for the longest distance will be allowed the preference, and passengers booked for the same distance will have priority according to the order in which they are booked.

2. Any passenger may have conveyed along with him any quantity of luggage belonging to him not exceeding sixty pounds in weight, without paying any additional charge, but the usual rate will be charged for all luggage exceeding that weight.

3. No dog will be permitted to accompany a passenger, but will be conveyed separately, and charged for.

4. If any passenger refuse to produce or deliver up his ticket, when required to do so by the guard or other proper officer, he shall be chargeable with the fare from the place whence the train originally started, and, in addition thereto, shall be liable to a penalty not exceeding forty shillings.

5. If any passenger shall be found in or upon any of the carriages, or shall force his way into a carriage without having previously obtained a ticket, or shall occupy (without permission) a carriage of a superior class to that for which he has obtained a ticket, or shall continue his journey in the Company's carriage beyond the place for which he shall have paid his fare, he shall be chargeable with the entire fare for the whole of his journey, and, in addition thereto, shall be liable to a penalty not exceeding forty shillings.

6. Smoking is strictly prohibited, both in and upon any of the Company's carriages, and in or at any of their stations; and any person persisting in smoking after being warned not to do so, shall be liable to a penalty not exceeding forty shillings; and any person so persisting, after being warned a second time, shall immediately, or if travelling at the time, then at the first stopping place, be removed from the Company's premises, and shall also forfeit his fare.

7. Any passenger being in a state of intoxication, or committing any nuisance, or wilfully interfering with the conduct of any other passenger, or obstructing any of the Company's servants in the discharge of his duty, or not attending to the directions of the guard whenever the personal safety of himself or any of the passengers is concerned, shall immediately, or if travelling at the time, then at the first stopping place, be removed from the Company's premises, and shall also forfeit his fare.

8. If any passenger shall wilfully damage any carriage, station, or other property of the Company, he shall be subject to a penalty not exceeding five pounds for every such offence, in addition to the cost of repairing such damage; and every person committing any accidental damage shall make good the same.

9. No fee or gratuity will be permitted to be taken by any guard, porter, or other servant of the Company, under pain of immediate dismissal.

By order of the Directors.

3rd November, 1841.

LETTER sent to Messrs. Bagshaw and Stevenson, Solicitors to the Sheffield and Manchester Railway Company, in reply to their Letter of the 12th November, relative to the Rules and Regulations of the Company.

GENTLEMEN,

Board of Trade, 24th November, 1841.

In reply to your letter of the 12th November, inclosing a copy of Orders and Regulations of the Sheffield and Manchester Railway Company for the approval of the Lords, &c., under the Act 3 and 4 Vict. c. 97, I am directed, &c. to inform you that Regulations 4 and 5 appear objectionable, inasmuch as they do not sufficiently distinguish between cases of fraud

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and inability to produce tickets. Their Lordships do not object to a regulation obliging passengers to take out tickets and making payment of the fare alternative on non-production of the ticket, although they would recommend this regulation not to be enforced with unnecessary harshness; and that the practice usual on well regulated railways should be adopted, of giving a discretionary power to some officer at each station to remit the payment of the fare when there is no reason to doubt the truth of the statement that the ticket has been lost. Nor do their Lordships object to reasonable penalties for the prevention of fraud; but, as the ticket system, which is adopted solely for the convenience of the Company, makes it inevitable that innocent persons should often be in the position of being unable to produce tickets, their Lordships think that the regulations should be so worded as to exclude the possibility of servants of the Company thinking it their duty to construe the non-production of the ticket, unaccompanied by other circumstances, as evidence of fraud.

Their Lordships' objection would be obviated by striking out the words "and in addition thereto shall be liable to a penalty not exceeding forty shillings" at the end of the 4th regulation, and the words "shall be found in or upon any of the carriages, or" in the 5th; or by any other alteration conformable to the principles above stated.

In the 7th regulation, the words "conduct of any other passenger" are unintelligible; "comfort" is probably meant, which is the usual word in the similar regulations of other Railway Companies.

Subject to the above remarks, and to any future steps which their Lordships may think it their duty to take for a general revision of the regulations of Railway Companies which affect the public, I am directed to convey their Lordships' confirmation of the regulations in question.

I am, &c.

S. LAING.

Messrs. Bagshaw and Stevenson, Solicitors to the Sheffield
and Manchester Railway Company.

TRANSMITTING amended Rules and Regulations of the Sheffield and Manchester Railway
Company.

MY LORDS,

Manchester, 4th December, 1841.

As the solicitors of the Sheffield, Ashton-under-Lyne, and Manchester Railway Company, we transmit to your Lordships a copy of the Bye-laws passed by the Directors of that Company for regulating the travelling on the line of railway.

In these bye-laws they have introduced the amendments suggested in your Lordships' communication of the 24th ult. namely, by omitting the objectionable words in Rules 4 and 5, introducing further words in Rule 5 to discourage fraudulent evasions of payment (and which from experience they have already found necessary), and by changing a word in Rule 7. We trust that your Lordships will now be able to approve of the rules, which we transmit in conformity with the Act 3 and 4 Vict. c. 97.

We have, &c.

BAGSHAW and STEVENSON.

The Lords of the Committee of Her Majesty's Privy Council
for Trade and Foreign Plantations.

AMENDED Code of Bye-laws of the Sheffield and Manchester Railway Company.

BY virtue of the powers of an Act of Parliament passed in the seventh year of the reign of King William IV., intituled "An Act for making a Railway from Sheffield, in the West Riding of the County of York, to Manchester, in the County of Lancaster," the following Orders and Regulations are made and passed:—

1. No person will be allowed to travel upon the railway without first having paid his fare and received a ticket.

Passengers at the intermediate or road stations will only be booked conditionally, (that is to say in case there shall be room in the train for which they shall be booked;) and in case there shall not be room, passengers booked for the longest distance will be allowed the preference; and passengers booked for the same distance will have priority according to the order in which they are booked.

2. Any passenger may have conveyed along with him any quantity of luggage belonging to him, not exceeding sixty pounds in weight, without paying any additional charge; but the usual rate will be charged for all luggage exceeding that weight.

3. No dog will be permitted to accompany a passenger, but will be conveyed separately, and charged for.

4. If any passenger refuse to produce or deliver up his ticket when required to do so by the guard or other proper officer, he shall be chargeable with the fare from the place whence the train originally started.

5. If any passenger shall force his way into a carriage without having previously obtained a ticket, or shall occupy (without permission) a carriage of a superior class to that for which he has obtained a ticket, or shall continue his journey in the Company's carriage beyond the place for which he shall have paid his fare, or shall fraudulently attempt in any way to evade the payment of his proper fare, he shall be chargeable with the entire fare for the whole of his journey, and in addition thereto, shall be liable to a penalty not exceeding forty shillings.

6. Smoking is strictly prohibited, both in and upon any of the Company's carriages, and in or at any of their stations; and any person persisting in smoking after being warned not to do so, shall be liable to a penalty not exceeding forty shillings; and any person so persisting, after being warned a second time, shall immediately, or if travelling at the time, then at the first stopping place, be removed from the Company's premises, and shall also forfeit his fare.

7. Any passenger being in a state of intoxication, or committing any nuisance, or wilfully interfering with the comfort of any other passenger, or obstructing any of the Company's servants in the discharge of his duty, or not attending to the directions of the guard whenever the personal safety of himself or any of the passengers is concerned, shall immediately, or if travelling at the time, then at the first stopping place, be removed from the Company's premises, and shall also forfeit his fare.

8. If any passenger shall wilfully damage any carriage, station or other property of the Company, he shall be subject to a penalty not exceeding five pounds for every such offence, in addition to the cost of repairing such damage; and every person committing any accidental damage shall make good the same.

9. No fee or gratuity will be permitted to be taken by any guard, porter, or other servant of the Company, under pain of immediate dismissal.

By order of the Directors.

1st December, 1841.

(Confirmed December 8th, 1841.)

No. 7.

BOLTON AND PRESTON RAILWAY.

REQUESTING to see the proposed Bye-Laws of the North Union Railway Company previous to their being sanctioned by this Department.

SIR,

Bolton, October 9, 1841.

HAVING been informed by the North Union Railway Company that "their bye-laws are now under revision, and that when completed they will be sent to the Board of Trade for sanction," I am instructed by the Directors of the Bolton and Preston Railway Company to beg, that an opportunity may be afforded to them of seeing the proposed bye-laws before they be sanctioned by the Lords of the Committee of Privy Council for Trade, in order that the Bolton and Preston Railway Company may, if necessary, call the attention of their Lordships to any thing which may appear to have a tendency unduly to prejudice the interest of the Bolton and Preston Railway Company, or to impede the public in the free and unrestricted use of the Bolton and Preston Railway.

The Bolton and Preston Railway Company are induced to adopt this course, believing that it may be more agreeable to their Lordships to have their attention called, in the first instance, to the probable effect of any proposed bye-laws than to have subsequently to deal with an application to rescind those which may have been sanctioned.

G. R. Porter, Esq.,
&c. &c.

I am, &c.

PETER SINCLAIR.

ADDITIONAL Rules and Regulations to be observed by the North Union Railway Company, and by the Owners or Persons having the care or management and conduct of Engines, Waggon, or Carriages, passing along or being upon the same, and by all parties using or working the said Railway. The breach of any of such Rules and Regulations will subject the Offender to a penalty of 5*l.*, unless otherwise specified, besides such responsibility as may attach at Common Law.

No. 31.—No goods or coal trains shall be allowed to carry in any one waggon a greater weight than four tons; and the coal or slack, or other articles carried loose, shall not be heaped up higher than 18 inches above the sides of the waggon.

No. 32.—Bye-law No. 7 is hereby repealed, and instead thereof, it is ordered that every coal or goods-train shall have one breaksman for any number of loaded waggons not exceeding nine; two breaksmen for any number of waggons exceeding nine, and not exceeding 18; three for any number of waggons exceeding 18, and not exceeding 27, and so on; another breaksman for every additional nine waggons.

No. 33.—Every train passing on the railway shall have the carriages or waggons of which it may be composed well coupled together with three good substantial coupling chains; and it shall be the duty of every engine-man, fireman, breaksman, and guard, that may accompany such train, to see that all the three coupling chains are kept constantly and securely hooked when the train is moving; and every engine-man, fireman, breaksman, or guard, neglecting this precaution shall be fined in any sum not exceeding 20*s.* each for every offence, each man being held alike responsible.

No. 34.—The breaksman of every train passing on the main lines where only one attends a train, shall always ride and be on the last waggon of the train when moving, and where more than one breaksman attends a train, one of them shall always be on the last waggon; and in the event of a breaksman being obliged unavoidably to leave such last waggon, the break shall be pinned down before he quits it. The plate-layers and others working on the line are required to report whenever the above rule is neglected; and any breaksman disregarding this regulation shall, on conviction, be fined any sum not exceeding 10*s.* for each offence.

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VIII.

Bye-Laws, Rules,
Orders, &c.

No. 6.

Sheffield, Ashton-
under-Lyne, and
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No. 7.

Bolton and Preston.

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VIII.

Bye-Laws, Rules,
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No. 35.—If any collier or goods-train shall unavoidably stop on the main lines, the engine-man of such train shall send back a trustworthy man at least 400 yards with a red flag by day and good light by night to warn any coming train of such stoppage.

No. 36.—Every engine using the railway shall proceed with the engine before the tender; and every engine-man who shall unnecessarily and without sufficient cause run his engine with the tender in front, shall, on conviction, pay a penalty not exceeding 20s. for every such offence.

No. 37.—No engine or train of an description shall pass through the Preston or Wigan station while the trains are stopping on the main lines to set down or take up passengers; and no engine or train shall pass through or by the station at Preston or Wigan at a greater speed than six miles per hour.

No. 38.—The incline on the New Springs Branch being 1 in 30, particular attention is required to the following regulations:—

1st.—That no locomotive engine can be permitted to pass alone the line that is not fitted with a powerful break, acting on the two driving-wheels on each side, in addition to a sufficient break fitted to the tender of such engine, and to act on four wheels.

2nd.—That every waggon using the incline shall be fitted with a good substantial double break and strong lever, and that every three loaded waggons be attended by one break-man in the descent, who shall ride in the foremost waggon down the incline, the other two waggons shall have the breaks pinned down.

3rd.—That no train of waggons or engines shall commence to descend until the previous train is clear off the incline.

4th.—No engine or waggon, whether full or empty, or other carriage, shall, under any pretence whatever, be left standing on the main line of the New Springs Branch Railway; and every owner of any engine, waggon, or other carriage so left, shall be liable to a penalty of 5*l.* for every such offence, half of which shall be paid to the informer, and the other half to the Company.

No. 39.—No locomotive engine shall be used on the railway exceeding in weight in the whole 15 tons; nor shall any locomotive engine be used having a greater weight on any one pair of wheels than seven tons.

Given under the common seal of the North Union Railway Company the twenty-eight day of October, one thousand eight hundred and forty-one.

(L. S.) Transmitted for Confirmation, October 30, 1841.

IN reply to Letter from this Office of the 1st November, relative to the Bye-Laws of the North Union Railway Company.

SIR,

Bolton, November 11, 1841.

UPON my return home after a few days absence I found your letter of the 1st instant, enclosing the additional regulations of the North Union Railway Company, which have been submitted to the Directors of the Bolton and Preston Railway Company.

The Directors of this Company had imagined from the terms of the communication received by them from the North Union Railway Company that none of their bye-laws had yet been submitted for the sanction of the Lords of the Committee of Privy Council for Trade. Of the additional regulations now proposed to be made by them, there is only one, No. 37, upon which the Directors of the Bolton and Preston Company deem it necessary to make any comment, but as the possible operation of this regulation is in a measure dependent upon the effect of some of the preceding bye-laws, I am directed to submit the few observations which have occurred to the Bolton and Preston Directors upon the whole of the North Union Company's bye-laws.

No. 3 appears to be in some respects inapplicable to waggon and carriages belonging to public railway companies whose lines may directly or indirectly communicate with the North Union Railway. In bye-law No. 2, which relates to locomotive engines, an exception is very properly made in regard to engines belonging to other railway companies, and it would be desirable that the same exception should be extended to their waggons and carriages.

No. 24 relates to locomotive engines, their drivers, &c.

It is presumed that this is not intended to apply to the engines or servants of other railway companies, but the repetition of the exception contained in No. 2 in this respect would obviate all doubt.

No. 22 and 23 relate to private railways communicating with the North Union Railway, and it would not have occurred to the Directors of the Bolton and Preston Company to suspect that these could have been applied to the Bolton and Preston Railway, but the North Union Company have recently called upon them expressly to confirm to No. 22. The Bolton and Preston Company deem the stop-bar required to be placed across their line and locked down, as well as the locking down of the indicator to be connected with moveable points, objectionable, as calculated to impede rather than to facilitate the ingress and egress of their trains, and consequently to increase the risk of accident. The Bolton and Preston Railway Company might safely be exempt from the operation of these two bye-laws, as sections 40, 42, 43, and 44 of this Act (1 and 2 Vic., c. 56) are sufficiently stringent upon them in providing for the safety of the North Union line at the points of junction, but they wish to limit their objection to the cross-bar, and the locking of that and of the indicator.

No. 4 directs that every engine, waggon, carriage, &c. being or working upon the North Union line, together with the persons attending the same, shall be under the control and

direction of the Company's servants as to the times of starting, speed of travelling, and in all other respects, as far as may be necessary to secure despatch and good order, and the safety of the public.

No. 25 provides that no coal-train shall leave the siding where it may happen to be until full 10 minutes after the passing of the train immediately preceding it, and that such coal-train shall never come nearer than one mile to the train preceding it.

No. 26 prohibits any collier or goods-engine from coming out on to, or crossing over the line on which any passenger-engine and train is expected within 15 minutes of the usual or ordinary time of its passing such place.

No. 27 requires that no collier or goods-train shall leave any station whatever at a less interval of time than 20 minutes before the usual time of passenger-trains passing such place of departure.

No. 37 declares that no engine or train of any description shall pass through the Preston station while the trains are stopping on the main lines to set down or take up passengers.

Unfortunately the Bolton and Preston and the North Union Railways will be in some respects rival lines, and as the Directors of the Bolton and Preston Railway Company cannot safely assume that the North Union Railway Company will be disposed to afford facilities for the Bolton and Preston business, it is incumbent upon them to consider the possible effect of these bye-laws, when applied as they may be by the subordinate servants of the North Union Company, and they are apprehensive that these five bye-laws may be so worked one with another as unduly to prejudice the Bolton and Preston Company's business, and to deprive the public of the advantages which the line is calculated to afford.

As to No. 4, it will readily be perceived that the servants of the North Union Company will be the only judges of what "may be necessary to secure despatch and good order, and the safety of the public;" and according to Nos. 25, 26, and 27, trains of goods or coals may not only be delayed 30 minutes, or, it may be, much longer, but their movements may be rendered so entirely uncertain as to interfere most seriously with all the arrangements of the Bolton and Preston Company in the application of their locomotive power, and the management of their business generally. No. 37 is so vague and indefinite as to time, that it is difficult to anticipate to what extent it may operate prejudicially to the Bolton and Preston Company whose Preston station is separated from that of the North Union Company by little more than 100 yards.

The Directors of the Bolton and Preston Railway Company would therefore respectfully submit the following modifications of these regulations:—

No. 4.—That the times of starting and speed of travelling of the Bolton and Preston Company's trains should not be matter of discretion from day to day on the part of the North Union Company's servants, but that these points should be definitely arranged if possible between the two Companies, the Board of Trade deciding between them in case of difference of opinion.

No. 25.—To expunge the period of 10 minutes therein mentioned, the safety of the preceding train being sufficiently secured by the distance required to be maintained between the two trains; or at all events that the 10 minutes should be reduced to such time as would allow the first train to get a mile a-head, say three or four minutes.

No. 26.—To reduce the 15 minutes therein mentioned to 10, and to let that time be reckoned from periods to be defined and affixed at the stations affected thereby; otherwise a train of goods or coal from Manchester or Bolton arriving at Euxton at 15 minutes before the usual or ordinary time for a passenger-train to pass that station in either direction would first be required to wait until the expiration of the 15 minutes, and in the event of either of the trains being behind its time, the North Union Company's servant at the junction might then (under No. 4) delay the goods-train as long as he thought proper, in the expectation of such passenger train in either direction, or until the approaching time for other trains one way or the other would afford a ground for still further detention.

No. 27.—It is submitted that 20 minutes is too long a period, and that this should be reduced, especially considering that the trains of the Bolton and Preston Company have not quite five and three-quarter miles of the North Union line to pass over.

No. 37.—Apparently the most simple mode of correcting this would be to require trains having to take up or set down passengers at the North Union Company's station at Preston to draw into the siding which has been provided there for the purpose, as is now done at important stations upon some other railways, so as to keep the main lines clear for express or other passing trains.

In order to elucidate the relative position of the two Companies, I enclose a short statement to which I beg to refer.

I am, &c.

PETER SINCLAIR.

S. Laing, Esq.,
&c. &c.

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Bye-Laws, Rules,
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No. 7.

Bolton and Preston.

In 1830 a Company was formed for the purpose of making a railway from Manchester to Preston, through Bolton, and they applied for an Act in the following Session of Parliament, but their object was for a time defeated through an Act being obtained in that session by the Manchester and Bolton Canal Company, for making a railway from Manchester to Bolton.

The Wigan and Preston Railway Company applied to Parliament at the same time, and obtained an Act for making a railway from Wigan to Preston; subsequently, this Company and the Wigan Branch Company were amalgamated under the title of the North Union Railway Company.

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For some considerable time the Wigan and Preston Company did not attempt to act upon the powers obtained by them; but in 1836 it became apparent to those who had taken the most active part in the projected measure of 1830, who were deeply interested in Bolton Chorley, &c., that the North Union line would (ere long) be completed, and that the large and important traffic on the Great North Road from Manchester, through Bolton, &c. would be diverted to the North Union Railway, unless efficient accommodation were provided for it on its original, and, as they conceived, legitimate route.

The present Bolton and Preston Company was in consequence formed, (a large proportion of the shares being taken by those who had constituted the Company of 1830,) and after a preliminary survey, an offer was made to the North Union Railway Company to join their line at Euxton, conditionally that they would agree to some modification of their rates, which as they then stood would have been absolutely prohibitory to Bolton and Preston business; but this overture was totally rejected. The Bolton and Preston Company then found it necessary to enter into an arrangement with the Lancaster Canal Company, under which they acquired the right of converting that Company's railway, which extends five miles out of Preston in the direction of Bolton, into a part of the main line of the proposed railway, and became bound to pay to the Canal Company 8000*l.* a-year for ever, for their railway, and for a portion of the revenue arising from the south level of the Lancaster Canal. The Bolton and Preston Company thereupon applied to Parliament for power to make an independent line of railway from Bolton to Preston, but were most energetically opposed at every step by the North Union Company. The Legislature ultimately sanctioned a railway from Bolton, through Chorley to Preston, but recommended the course first proposed by the Bolton and Preston Company, namely, a junction with the North Union line at Euxton, upon a reduction of their rates. Both parties, of course, acceded to the recommendation, but probably with equal reluctance, for while the North Union Company's object of absolute annihilation to the Bolton and Preston Company was defeated, the Bolton and Preston Company's object in their arrangement with the Canal Company was also in a great measure rendered nugatory, while they continued bound for ever to the payment of the 8000*l.* a-year to that Company.

Upon the application to Parliament in the ensuing session for the necessary powers to carry this arrangement into effect, the Bolton and Preston Company, to whom a Preston station was absolutely indispensable, applied for power to make a branch, diverging from the North Union line a little to the south of the North Union station at Preston, so as to prevent the necessity for the trains passing through the station; but the North Union Company stated that there would be no objection to the Bolton and Preston trains passing through their station, as they should provide sidings for their own trains, so as to keep the main lines clear, and they induced the Bolton and Preston Company to purchase from them at an expense (including interest, &c.) of between 8000*l.* and 9000*l.*, a large house, and other premises belonging to them, about 100 yards to the north of the North Union station, which appeared to the Bolton and Preston Company well adapted for their station in connexion with other land acquired by them from the Lancaster Canal Company. The proposed branch was thereupon abandoned, and clauses introduced into the Act passed, prohibiting the use of the North Union Company station by the Bolton and Preston Company, and defining the mode of access from the North Union line into the land so purchased from the North Union Company for a station for the Bolton and Preston Railway Company.

LETTER sent to the North Union Railway Company relative to their Bye-Laws, &c.

SIR,

Board of Trade, Whitehall, November 13, 1841.

I AM directed, &c. to inform you that their Lordships have considered the nine additional regulations of the North Union Railway Company, given under the common seal of the Company on the 28th October, and submitted for their Lordships' confirmation in terms of the Act for regulating railways. Certain objections have been stated to these regulations, and to some of the other regulations of the Company, on the part of the Bolton and Preston Railway Company; but as it appears to their Lordships that their objections will not apply until the Bolton and Preston line is opened throughout, they have determined on postponing a consideration of them until that line is ready for opening, when it will be necessary to take a general review of the arrangements for working the junction.

In the mean time, their Lordships direct me to signify to the Directors their provisional confirmation of the additional regulations in question.

The Secretary to the North Union
Railway Company.

I am, &c.
S. LAING.

LETTER sent to the Bolton and Preston Railway Company relative to the Bye-Laws of the North Union Company, in Reply to their Letter of the 11th November.

SIR,

Board of Trade, Whitehall, November 13, 1841.

IN reply to your letter of the 13th November stating certain objections on the part of the Bolton and Railway Company to the regulations of the North Union Railway Company, I am directed, &c., to inform you that it appears to their Lordships that the consideration of these objections may be properly postponed until the period when the Bolton and Preston Line is ready for opening throughout, when it will be necessary to take a general review of the arrangements for working the junction with the North Union Railway.

In the mean time, therefore, their Lordships have given a provisional confirmation to the new regulations of the North Union Railway Company without prejudice to the right of the Bolton and Preston Railway Company to have their objections fully considered on a future occasion.

The Secretary of the
Bolton and Preston Railway Company.

I am, &c.

S. LAING.

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RELATIVE to the Bye-Laws of the Company.

SIR,

Preston, November 27, 1841.

I SUBMITTED the provisional confirmation by the Lords of the Committee of Privy Council for Trade of the nine additional bye-laws of this Company passed under the common seal the 28th October last, and am desired to acquaint you, for their Lordships' information, that the Directors do not consider it expedient to issue or publish such bye-laws provisionally, and until permanently settled, as they involve permanent arrangements on the part of those who use the line. I am therefore to request a decision that shall be conclusive, and to suggest that experience has shown the necessity of the rules or bye-laws submitted, and that they underwent a very searching inquiry before they were sent up for approval, the result of which was that public safety required their adoption.

I have, &c.

JAMES CHAPMAN.

G. R. Porter, Esq.
&c. &c.

LETTER sent to the North Union Railway Company relative to their Rules and Regulations, &c.

SIR,

Board of Trade, Whitehall, December 1, 1841.

IN reply to your letter of the 27th November, stating that the Directors of the North Union Railway Company request a conclusive decision on the additional regulations submitted to this Department, as they do not consider it expedient to publish such regulations until permanently settled, I am directed, &c., to inform you that their Lordships' confirmation was conclusive as regards the present circumstances of the railway; though, of course, it remains open to the Bolton and Preston Railway Company, or to any other parties to show, at any future period, that such regulations ought not to be applied to them, and until the whole circumstances of the case are fully before their Lordships, which in regard to most of the objections raised by the Bolton and Preston Railway Company cannot be the case until that line has been inspected previous to its final opening, their Lordships cannot give any pledge as to what their final decision may be.

It has been represented, however, to their Lordships, that it is important for the North Union Railway Company to have the regulations No. 2, 31, and 32, relative to the construction of carriages and waggons, definitively settled, and it appears to their Lordships that this admits of being done without delay, and with advantage to all parties. The Bolton and Preston Railway Company have represented that the exception contained in regulation No. 2 ought to be extended to No. 3, and that this regulation, with the regulations 31 and 32, founded upon it, ought not to apply to the carriages and waggons of public railway companies when lines may directly or indirectly communicate with the North Union Railway. It appears to their Lordships that under the 189th section of the North Union Company's Act, 4 Wm. IV., c. 25, the Company are not bound to admit the carriages and waggons of other railway companies unless constructed and loaded in conformity with their own regulations. Their Lordships, therefore, will be prepared to confirm such regulations as are applicable to the carriages and waggons of the Bolton and Preston Railway Company, provided they are found to be fair and reasonable. With a view to come to a definite decision upon this point their Lordships think it desirable that the North Union Railway Company should, without loss of time, communicate to this Department and to the Bolton and Preston Railway Company the specific regulations as regards the construction of passenger, goods, and coal-carriages, and waggons, which they propose to enforce under regulation No. 3, as regards the Bolton and Preston Railway Company. Their Lordships have called upon the Bolton and Preston Railway Company to state their objections specifically, and after having duly considered the statements of both parties they will be prepared to give a definite decision.

I am, &c.

S. LAING.

The Secretary of the North Union
Railway Company.

LETTER sent to the Bolton and Preston Railway Company relative to the Rules and Regulations of the North Union Railway Company.

SIR,

Board of Trade, Whitehall, December 1, 1841.

WITH reference to the regulations of the North Union Railway Company, I am directed, &c., to inform you that that Company have represented that it is important for them to have the regulations Nos. 2, 31, and 32, relative to the construction of carriages and waggons using the line, definitively settled without loss of time. Although their Lordships have, as I have already informed you, adjourned the consideration of the other objections relative to the intervals between trains and mode of working the junction until the Bolton and Preston Line has

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been inspected previous to opening, it appears to them that it would be advantageous for all parties that the question as to the construction of carriages and waggons should be settled at once.

It appears to their Lordships that under the 189th section of the North Union Company's Act 4 Wm. IV., c. 25, that Company is entitled to make regulations affecting the carriages and waggons of the Bolton and Preston Railway Company as well as those of private parties using the line, and their Lordships will therefore be prepared to confirm such regulations as are found to be fair and reasonable.

With a view to come to a definite decision upon this point, their Lordships think it desirable that you should ascertain from the North Union Company what the precise regulations are which they propose to enforce as regards the passenger, goods, and coal-carriages, and waggons of the Bolton and Preston Company, when that line comes into operation, and that having done so, the Directors of your Company should, if they fail in coming to an amicable understanding upon the subject, state to this Department the specific objections which they have to these regulations. Their Lordships have written to the same effect to the North Union Company, and after having fully heard the statements of both parties, they will be prepared to give a definite decision upon the point above referred to, viz., the regulations applicable to carriages and waggons.

I am, &c.

S. LAING.

The Secretary of the
Bolton and Preston Railway Company.

Copy of Rules and Regulations.

SIR,

Preston, December 24, 1841.

IN compliance with the desire of the Lords of the Committee of Privy Council for Trade expressed in your letter of the 1st instant in reference to the specific regulations as regards the construction of passenger, goods, and coal-carriages, and waggons, which the Directors of this Company may see fit to make under the 189th section of the 4 Wm. IV., c. 25, and which their Lordships thought it desirable should, without loss of time, be communicated to them and also to the Bolton and Preston Railway Company, I am directed to send you the accompanying print of the orders and regulations published by the Board of Directors the 23rd December inst., and ordered to be affixed to the toll-houses, &c. in compliance with the 189th section of the said Act; I am also to acquaint you that, by this post, in accordance with their Lordships' desire a print is sent to the Bolton and Preston Company's office, Bolton.

Referring to my letters respecting the confirmation of the nine additional bye-laws passed under the common seal of the Company the 28th October last, I beg to remind you that the publication of the same awaits their Lordships' decision.

I have, &c.

S. Laing, Esq.,
&c. &c.

J. CHAPMAN, Secretary.

RULES and REGULATIONS.

PURSUANT to the 189th section of an Act passed in the fourth year of the reign of King William the Fourth, intituled "An Act for uniting the Wigan Branch Railway Company and the Preston and Wigan Railway Company for authorizing an alteration to be made in the Line of the last-mentioned Railway, and for repealing, altering, and amending the Acts relating to the said Railways."

Notice is hereby given,

That on and after the 1st day of January, 1842, all persons who shall pass or be upon any part of the North Union Railway with any carriage for the conveyance of goods, coal, cattle, or passengers, are required to attend and conform to the following orders and regulations in respect to the construction thereof, and at all times hereafter to maintain the same agreeable to such orders, &c.

Waggons or carriages for the conveyance of goods, coals, cattle, or any other article, matter, or thing, not to exceed in weight, exclusive of load, 2 tons 15 cwt. To be of a proper gauge to suit the gauge of the rails, namely, 4 feet 8½ inches. To be placed on well-manufactured wheels of not less than 3 inches diameter, with good axles, of not less than 3½ inches diameter in the middle, swelled up to 4 inches at the shoulder, with a strong frame, supported on 4 good bearing springs, and not less than 3 sufficient coupling chains at each end, and 1 break.

Carriages for the conveyance of passengers not to exceed in weight, exclusive of any load, 4 tons 10 cwt., and inclusive of load 7 tons. To be placed on the best manufactured wheels of not less than 3 feet diameter; and the axles to be of the best scrap iron, forged, hammered, and turned to not less than 3½ inches diameter in the middle, swelled up to 3¾ inches at the shoulder. The frames to be supported on 4 good bearing springs, and to have two sufficient side coupling chains, and a centre one. Every passenger train to have at least ¾ths of the train composed of carriages with breaks.

Lorries for the conveyance of private carriages to be on the best manufactured wheels of not less than 2½ feet diameter, and best axles not less than 3 inches diameter, the platform supported on 4 good bearing springs, and to be furnished with 2 sufficient side coupling chains and a centre one.

Horse-boxes to be on the best manufactured wheels of not less than 2½ feet diameter, and axles of 3 inches diameter. To be on 4 good bearing springs, and to have 2 sufficient side coupling chains and a centre one.

Published by order of the Board, the
23rd day of December 1841.

JAMES CHAPMAN, Secretary.

WILLIAM COULTHARD, Engineer.

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RELATIVE to the Bye-Laws of the North Union Railway.

SIR,

Bolton, December 28, 1841.

ON the 24th instant Mr. Chapman, the secretary of the North Union Railway Company, forwarded to me a printed copy of the orders and regulations made by that Company in regard to the construction of waggons and carriages to be used upon their line, and dated the 23rd instant.

I now beg to state on behalf of the Bolton and Preston Railway Company that they do not object to these regulations.

I presume that the regulations have been forwarded to you by the North Union Company.

I have, &c.,

S. Laing, Esq.,
&c. &c.

PETER SINCLAIR.

LETTER sent to the North Union Railway Company confirming the Regulations Nos. 31 to 39 inclusive, passed on the 28th October, and the supplementary ones of the 23rd December.

SIR,

Board of Trade, Whitehall, December 30, 1841.

I AM directed, &c., to convey to the Directors of the North Union Railway Company in terms of the Act 3 and 4 Vic. c. 97, for regulating railways, their Lordships' confirmation of the nine additional regulations, Nos. 31 to 39 inclusive, passed under the common seal of the Company on the 28th October last, together with the supplementary regulations of the 23rd December relative to the construction of carriages and waggons to be used on the North Union Railway.

I am, &c.

S. LAING.

The Secretary of the
North Union Railway Company.

No. 8.

NORTH MIDLAND RAILWAY.

ORDERS and REGULATIONS.

By virtue of the powers and provisions contained in an Act of Parliament, passed in the sixth and seventh years of the reign of his late Majesty King William the Fourth, intituled "An Act for making a Railway from Leeds to Derby, to be called the North Midland Railway," We, the North Midland Railway Company, established and incorporated by the above-mentioned Act, do hereby make the following Orders and Regulations relating to travellers passing upon the said railway, and for preventing the smoking of tobacco and the commission of any other nuisance in or upon any of the carriages, or in or upon any of the stations belonging to the said Company, of which all persons whom it may concern are hereby required to take notice.

I. All passengers are required, upon booking their places, to take a ticket and to produce the same (if required) previously to taking their seats in or upon any of the Company's carriages, and to deliver up the same previously to quitting the Company's premises. And any person refusing to produce or deliver up such ticket when required by the Company's officer is hereby made subject to a penalty not exceeding 40s.

II. Passengers at the road stations will only be booked conditionally (that is to say), in case there shall be room in the train for which they are booked; in case there shall not be room for all the passengers booked, those booked for the longest distance shall have the preference, and those booked for the same distance shall have priority according to the order in which they are booked.

III. Any passenger riding in a carriage of a superior class to that for a seat or place in which he has paid his fare, shall pay the difference in the fare, and is also made liable to a penalty not exceeding 40s.

IV. Dogs will not be suffered to accompany passengers in the Company's carriages.

V. Smoking is strictly prohibited both in the carriages and in the Company's stations. Any passenger persisting in smoking after being warned not to do so is hereby subjected to a penalty not exceeding 40s.; and in case of his persisting after a second warning, he will be immediately, or if travelling, at the first stopping place, be removed from the Company's carriages and forfeit his fare.

VI. Any passenger in a state of intoxication committing any nuisance or interfering with the comfort of other passengers, obstructing any of the Company's officers in the discharge of their duty, or not attending to the directions of such officers where the personal safety of himself or any of the passengers is concerned, will be immediately removed from the Com-

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pany's premises; or, in case the train shall at the time be moving, then at the next station, or as soon after the offence as may be, and shall forfeit his fare, and is also made liable to penalty not exceeding 40s.

VII. Any passenger cutting the linings, removing or defacing the number-plates, breaking the windows, or otherwise damaging or injuring any of the Company's carriages, shall forfeit and pay a sum not exceeding 5*l.* in addition to the amount of damage done.

Given under our common seal this 28th day of October, in the year of our Lord, 1841.

Submitted for confirmation, 11th December, 1841.

LETTER sent to the North Midland Railway Company, relative to the Rules and Regulations of the Company.

SIR,

Board of Trade, Whitehall, 13th December, 1841.

WITH reference to the proposed code of regulations of the North Midland Railway Company, submitted to the Lords, &c., for approval under the Act for regulating Railways, I am directed, &c., to inform you that the objects which those regulations have in view appear proper, but that the wording appears, in some cases, open to objection, especially in not distinguishing with sufficient accuracy between the enforcement of the ticket system and the punishment for fraud. The plan of obliging passengers to take out tickets, which is adopted for the convenience of the Company, makes it inevitable that tickets should be occasionally lost; and although their Lordships are prepared to admit the principle that the ticket is in the first instance to be considered as the sole voucher for payment of the fare, they think it improper that any regulation for this purpose should be so worded as to admit of the possibility of a servant of the Company supposing it to be his duty to infer fraud from the mere fact of the inability of the party to produce the ticket.

Their Lordships therefore suggest, for the adoption of the Directors, the following regulations, which have been prepared with a view to introducing a greater degree of uniformity and correctness in the regulations of Railway Companies generally, and which appear to their Lordships to carry into effect the objects of the Company more completely than the proposed code while they avoid the objections above referred to. (Standard Regulations. See Report, p. 18.)

Their Lordships have further to observe, that as the various penalties imposed by those regulations may involve, in certain cases, a power of apprehending and detaining persons suspected of offences, it is important that proper instructions should be given to the servants of the Company charged with carrying them into execution, and their Lordships therefore request that a copy of such instructions may be forwarded along with the amended code. The principal points which those instructions ought to embrace are:—

1. That a discretionary power should be lodged with some proper officer at each station, of remitting the payment of the fare required by the first regulation, in cases where he has reason to believe that the ticket has been really lost, and that it would be a great hardship on the party to insist on the payment.

2. That all cases where the ticket is said to have been lost should be promptly investigated, and, if the assertion is found to be correct, the entire fare which has been demanded should be repaid.

3. That the power of detaining the party should be exercised with great caution, and never where the address of the party is known or adequate security is given for his appearance to answer the charge.

4. That in all cases where the party is detained, information should be at once given to the superior officers of the Company, and the offender should be taken before a magistrate as soon as possible.

The Secretary of the North Midland
Railway Company.

I am, &c.

S. LAING.

ORDERS and REGULATIONS.

BY Virtue of the Powers and Provisions contained in an Act of Parliament passed in the Sixth and Seventh Years of the reign of His late Majesty King William the Fourth, intituled "An Act for making a Railway from Leeds to Derby, to be called 'The North Midland Railway,' we, the North Midland Railway Company, established and incorporated by the above-mentioned Act, do hereby make the following Orders and Regulations relating to Travellers passing upon the said Railway, and for preventing the Smoking of Tobacco, and the commission of any other nuisance in or upon any of the carriages, or in or upon any of the stations belonging to the said Company, of which all persons whom it may concern are hereby required to take notice.

1. No passenger will be allowed to take his seat in or upon any of the Company's carriages, or to travel therein upon the said railway, without having first booked his place and paid his fare. Each passenger booking his place will be furnished with a ticket, which he is to show when required by the guard in charge of the train, and to deliver up before leaving the Company's premises, upon demand, to the guard or other servant of the Company duly authorized to collect tickets. Each passenger not producing or delivering up his ticket, will be required to pay the fare from the place whence the train originally started.

2. Passengers at the road stations will only be booked conditionally, that is to say, in case there shall be room in the train for which they are booked; in case there shall not be room for all the passengers booked, those booked for the longest distance shall have the preference; and those booked for the same distance shall have priority, according to the order in which they are booked.

3. Every person attempting to defraud the Company by riding in or upon any of the Company's carriages without having previously paid his fare, or by riding in or upon a carriage of a higher class than that for which he has booked his place, or by continuing his journey in or upon any of the Company's carriages beyond the destination for which he has paid his fare, or by attempting in any other manner whatever to evade the payment of his fare, is hereby subjected to a penalty not exceeding forty shillings.

4. Dogs will not be suffered to accompany passengers in the Company's carriages.

5. Smoking is strictly prohibited, both in and upon the carriages, and in the Company's stations. Every person smoking in a carriage is hereby subjected to a penalty not exceeding forty shillings; and every person persisting in smoking in a carriage or station, after being warned to desist, shall, in addition to incurring a penalty not exceeding forty shillings, be immediately, or if travelling, at the first opportunity, removed from the Company's premises, and forfeit his fare.

6. Any person found in the Company's carriages or stations in a state of intoxication, or committing any nuisance, or otherwise wilfully interfering with the comfort of other passengers; and every person obstructing any of the Company's officers in the discharge of their duty, is hereby subjected to a penalty not exceeding forty shillings, and shall immediately, or if travelling, at the first opportunity, be removed from the Company's premises, and forfeit his fare.

Note.—Persons wilfully obstructing the Company's officers in cases where personal safety is concerned, are liable under the 3rd and 4th Vict. c. 97, s. 16, to be apprehended and fined five pounds, with two months' imprisonment in default of payment.

7. Any passenger cutting the linings, removing or defacing the number-plates, breaking the windows, or otherwise wilfully damaging or injuring any of the Company's carriages, shall forfeit and pay a sum not exceeding five pounds, in addition to the amount of damage done.

Given under our common seal this nineteenth day of January, in the year of our Lord one thousand eight hundred and forty-two.

CONFIRMED by the Lords of the Committee of Council for Trade, January 21st, 1842.
S. LAING.

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HARTLEPOOL RAILWAY.

BYE-LAWS, &c.

THE Hartlepool Railway Company beg to submit the following Rules, Orders, Regulations, and Bye-Laws made by them in pursuance, and by virtue of two several Acts of Parliament, the first Act passed in the 2nd and 3rd years of the reign of King William the Fourth, cap. 67, intituled "An Act for making and maintaining wet Docks in the Port of Hartlepool, and a Railway from the said Docks into the Township of Moorsley, with certain branches therefrom, all in the County of Durham," and the second Act passed in the 4th and 5th years of the reign of His said Majesty, cap. 56, intituled "An Act to enable the Hartlepool Dock and Railway Company to make a new branch of Railway to the City of Durham, and for amending an Act of the 2nd year of His present Majesty relative to the Hartlepool Railway," for the approbation of the Lords of the Committee of Her Majesty's Privy Council, appointed for Trade and Foreign Plantations.

Pursuant to Act 3rd and 4th Vic., cap. 97.

	£.	s.	d.
1. Any person conveying any passenger upon the railway in any waggon or other carriage, or upon any engine without the licence of the Company, shall forfeit a sum not exceeding	5	0	0
2. Any person suffering any horse, mule, ass, cow, or other cattle to trespass upon the lands or grounds belonging to the Company, or suffering any horse, mule, ass, cow, or other cattle to be loose on the said railway, or committing any wilful trespass or damage in or upon the said railway, lands, or grounds, shall over and above the amount of any such damage forfeit a sum not exceeding	2	0	0
3. Every person using a locomotive engine, waggon, or other carriage, deemed unfit by the engineer of the Company, shall forfeit a sum not exceeding	5	0	0
4. Every person running an engine more than eight, or less than five miles an hour, except when leaving the branches for the main line, shall forfeit for each offence a sum not exceeding	2	0	0
5. Every person driving a horse, mule, or ass on the railway less than four miles an hour, or who shall refuse to take the first siding or thorough shoot when overtaken by a locomotive engine, and every engine-driver or other person having the charge of waggons or other carriages, who shall neglect or refuse to take the first siding or			

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	£.	s.	d.
thorough shoot when overtaken by the coach train, and adjust the switches after him, or who shall in any way wilfully or negligently obstruct the progress of the coaches or traffic on the railway, shall forfeit a sum not exceeding	5	0	0
6. Every engine-man who shall stop his engine, or discharge steam from the same near to any public road, shall forfeit for each offence a sum not exceeding	1	0	0
7. Every owner of a waggon or other carriage, or driver or conductor of the same, who shall suffer the same to proceed along the railway without sufficient propelling power or number of persons to manage or conduct the same, shall for every offence forfeit a sum not exceeding	2	0	0
8. Every engine-driver, waggon-driver, or other person conducting an upward train who shall neglect or refuse to take, or go back to the sidings where the way is single on meeting a downward train, shall forfeit for each offence a sum not exceeding	5	0	0
9. Any person conveying along the railway any goods or materials exceeding four tons weight upon one waggon or other carriage with four wheels without springs, or conveying more than six tons upon any waggon or carriage mounted upon springs, shall forfeit a sum not exceeding	5	0	0
N.B. No carriage to convey above eight tons under any circumstances without the licence of the Company.			
10. Any person conveying along the railway any timber, iron, or other materials exceeding 22 feet in length upon one waggon, or, if exceeding 22 feet in length upon two waggons or carriages connected together, the said waggons or carriages not being provided with proper swivel blocks to admit of their passing freely round or along the curves on the railway, shall forfeit a sum not exceeding	1	0	0
11. Any person conducting any engine, waggon, or carriage, or train of waggons or carriages upon the railway after sunset or before sunrise, without carrying a conspicuous light at each end thereof, shall forfeit for each offence a sum not exceeding	5	0	0
12. Any person conducting any locomotive engine, waggon, carriage, or train of waggons or carriages, except carriages with passengers, round or along any of the curves within any cut upon the railway beyond the rate of six miles an hour, or who shall pass from the branches into the main line beyond the rate of three miles an hour, shall forfeit for each offence a sum not exceeding	1	0	0
13. Every person conducting a locomotive engine, waggon, or carriage, or train of waggons or carriages, who shall neglect on approaching the signal post near the switches at the end of any branch to make a proper signal of his approach by blowing a whistle or ringing a bell, shall forfeit a sum not exceeding	1	0	0
14. Any person placing any engine, waggon, or carriage, or any other matter or thing in the sidings specially appointed for the coaches, shall forfeit a sum not exceeding	2	0	0
15. Any person suffering the lading of a waggon or carriage to be over the side thereof, or loading or discharging any waggon, or leaving any waggon or carriage, or any other article, matter, or thing upon the full or empty railways, shall forfeit a sum not exceeding	2	0	0
16. Any person or persons sending coals upon any part of the railway or works, when there are no ships to receive them, shall forfeit for each offence a sum not exceeding	5	0	0

GENERAL BYE-LAWS.

17. Any person neglecting or refusing to give the collector of the rates or tolls an account in writing of the quantity of goods or other things in any waggon or other carriage from whence brought, or where intended to be unloaded, or left, or refusing to bring his waggon to a weighing machine, or to produce a bill of lading, or giving a false account, or who shall deliver any part of his loading at any other place than what is mentioned in such account, or who shall refuse or neglect to give notice to the collector when goods are loaded or removed from any wharf or quay, or who shall refuse to produce the register of such vessel at the Company's office when requested by the collector of tolls, harbour master, or other authorized agent of the Company shall forfeit a sum not exceeding	5	0	0
18. Any person riding, leading, or driving any horse, ass, mule, cow, or other cattle upon the said railway, except for the necessary occupation of farms, or upon any quay, wharf, or other works, or riding in or upon any waggon, engine, or other carriage, or travelling on foot upon the said railway without the licence of the Company, shall forfeit a sum not exceeding	2	0	0

	£.	s.	d.
19. Every owner of a waggon or carriage, not having his name and the number of his waggon painted on the outside thereof in white letters and figures on a black ground, three inches high at least, or refusing to permit such waggon or carriage to be gauged or measured at the expense of the Company, shall forfeit a sum not exceeding	5	0	0
20. For damage, spoil, or mischief done to the said docks or railway, or the works thereof, or to adjoining lands, by any ship, hoy, barque, flat, coble, or other vessel, or by any waggon or other carriage, or by the master of such vessel, or by the waggouer or other person belonging to such waggon or other carriage, the owner thereof, besides the amount of such damage, spoil, or mischief, shall forfeit a sum not exceeding	2	0	0
21. Any person defacing or destroying any board whereon any notices, rules, orders, bye-laws, tolls, or rates shall be painted or any stone or other mark set up for ascertaining distances, or who shall stick or post up bills on any of the staiths, walls, gears, or other works of the Company, shall forfeit a sum not exceeding	5	0	0
22. Any person evading tolls shall forfeit a sum not exceeding	5	0	0
23. Any person firing or assisting in the firing of any cannon, gun, or pistol on board of any ship or vessel in the harbour or works, or upon the quays, wharfs, or railway, or playing at any game, or throwing any missile upon or over the said railways, quays, or wharfs, shall forfeit a sum not exceeding	5	0	0
24. Every person who shall interfere with, or obstruct any agent or servant of the Company in discharge of his duty, or in the working of the docks or railway, shall forfeit for each offence a sum not exceeding	5	0	0
25. Any person negligently, wilfully, or maliciously damaging, or causing damage to the railways or works, or to any engine, tender, coal waggon, truck, or other carriage upon the railway, shall forfeit a sum not exceeding	5	0	0
26. Any engine-driver, waggon-driver, or other person having the charge of any waggon or other carriage, who shall neglect or refuse to obey the orders and regulations of the Company's agents or servants framed upon, and pursuant to, and in conformity with these bye-laws, for the working of the docks and railway, shall forfeit a sum not exceeding	5	0	0
Durham, 4th December, 1841.	HENRY DONKIN, } Clerks to the said JOHN BURRELL, } Company.		

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LETTER sent to the Hartlepool Dock and Railway Company in reply to their Letter, enclosing the Bye-laws, &c. of the Company for confirmation.

SIR,

Board of Trade, Whitehall, 9th December, 1841.

I AM directed, &c., to inform you that their Lordships have had under consideration the Regulations of the Hartlepool Dock and Railway Company, submitted for their confirmation under the Act for Regulating Railways.

1. Is confirmed.

2. The first part of this Regulation is worded, so as to impose a penalty on the owners of lands adjoining the railway, if they do not prevent their horses, &c., from straying upon the line. This is improper, as the onus of keeping the railway properly fenced lies with the Company (2 Wm. IV., c. 67, s. 100.) The regulation appears unnecessary, as the case of wilful trespassing is provided for by Regulation 18, and by Lord Seymour's Act, 3rd and 4th Vic., c. 97, s. 16. At any rate it must be amended, so as to obviate the above objections before their Lordships can sanction it.

3. In the case of carriages and waggons, the Company's Act, 2 Wm. IV., c. 67, s. 108, provides that the orders and regulations laid down by the Company shall be conspicuously affixed at toll houses. This ought to be done, and the penalty made to attach on a breach of these regulations, and not on the verbal discretion of the engineer. In the case of locomotive engines, the regulation will be proper, if the words "persisting in" are inserted before "using," as the Act expressly requires notice to be given before any penalty is incurred.

4. Confirmed.

5. The wording is somewhat obscure, but their Lordships understand it to mean horses, &c. attached to waggons. If so, it is confirmed.

6. The word "unnecessarily" ought to be inserted before "stop," as in case of the engine-man seeing any obstruction, or receiving a signal from the gate-keeper, it would be his duty to stop.

7. Confirmed. It is suggested, however, whether this regulation might not with advantage be made more definite.

8—14. Confirmed.

15. The intention appears proper, but the words "full or empty railways," are very obscure.

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16. Confirmed.
17. Disallowed as to the amount of penalty, which by the 2d Wm. IV., c. 67, s. 94, ought not to exceed 10s.
18. In terms of the 2d Wm. IV., c. 67, s. 114, an exception ought to be made in favour of persons having goods or merchandize hauled along the railway, and riding, or passing along the same, for the *bonâ fide* purpose of superintending the carriage and delivery thereof.
19. Confirmed.
20. After the word "done," the words "by wilfulness or negligence" ought to be inserted; unless the damage arises from wilfulness or negligence, there should be no fine.
- 21 and 22. Confirmed.
23. Confirmed, with an exception for the case of throwing missiles upon the railway, so as to endanger the safety of persons using the same, which is made a misdemeanour by Lord Seymour's Act, 3d and 4th Vic., c. 97, s. 15. A notice of this ought to be substituted.
24. Obstructing servants of the Company in the discharge of their duty is also provided for by Lord Seymour's Act, s. 16; a notice of which should be substituted for the regulation.
25. Confirmed.
26. Disallowed, as professing to delegate to servants or agents of the Company a power of making orders and regulations to be observed under a penalty. The clause of Lord Seymour's Act last referred to seems quite sufficient to enable the Company's servants to carry the Company's regulations into effect.

I am, &c.,
S. LAING.

The Clerk to the
Hartlepool Dock and Railway Company.

The amendments suggested in this letter adopted, and the amended code confirmed.

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Edinburgh and
Glasgow.

No. 10.

EDINBURGH AND GLASGOW RAILWAY.

IN Reply to Letter of the 6th December; also enclosing Copy of the Bye-Laws of the Company.

SIR,

Head Office, Glasgow, December 8, 1841.

THE Directors have now prepared the bye-laws which it is proposed the Company should pass. For this purpose, a meeting of the Proprietors is to be held on the 4th of January next; but, in the meantime, I am directed to forward a copy for the consideration of the Lords of the Committee of Privy Council for Trade.

S. Laing, Esq.,
&c. &c.

I have, &c.
H. G. WRIGHT, Secretary.

ABSTRACT of Regulations made, and Penalties imposed by the Company's Act of Incorporation and Amendment Act, so far as the same do not regard the Servants of the Company.

1. ANY person neglecting to shut and fasten a gate set up at either side of the railway, after passing through the same with the carriages, cattle, or other animals or things under their care, is liable in a penalty not exceeding forty shillings.

2. Any person who shall send or cause to be sent by the railway any aquafortis, oil of vitriol, gunpowder, or other goods of a dangerous quality, and who shall not distinctly mark the nature of such goods on the outside of the package containing the same, or otherwise give notice thereof in writing to the book-keeper, or other servant of the Company with whom the same shall be left, is liable in a penalty of ten pounds.

3. Any person art and part in defacing or destroying any board, or the stones or marks set up to denote distances on the railway, is liable in a penalty not exceeding five pounds.

4. Any person who shall neglect or refuse to give a true account in writing, signed by him, to the collectors of the rates or tolls at the places where they shall attend for that purpose, stating the quantity of goods or other things which shall be in or upon the carriages belonging to him, or under his care, and from whence such carriages were brought, and where the same are intended to be unloaded, or left, or taken off the railway, and stating whether such goods or other things shall be liable to the payment of different rates or tolls, and if so, specifying the respective quantities liable to each or any of the rates or tolls, and any person who shall neglect or refuse to produce a bill of lading to any collector demanding the same, or shall give a false account, or shall leave or deliver out or take off any part of his lading or goods at any other place than what is mentioned in such account, is liable to pay the Company any sum not exceeding forty shillings for every ton of goods or for any parcel not exceeding one hundred weight, and so on in proportion to any less quantity than a ton or one hundred weight.

5. Any person who shall refuse or neglect on demand to pay the rates, tolls, or other sums due in respect of goods, articles, or other things carried along the railway, to the collectors appointed to receive the same, is liable to have the said goods, articles, or other things detained until such payment shall be made, with all reasonable charges for the seizure and detention; and if such goods, articles, and things shall not be redeemed within twenty-one days from the taking thereof, the same shall be sold, and such rates, tolls, sums, and charges satisfied thereout.

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6. Every owner or other person who shall have the care of any carriage or engine, or who shall conduct the same on the railway, and who shall not have such carriage or engine previously weighed, measured, and gauged, and the weight, measure, and gauge thereof, together with the number thereof, and also the number and place of abode of the owner thereof, entered with the secretary or clerk, or other officer of the Company appointed for the purpose; or without having such name, place of abode, number, weight, and gauge marked upon each such carriage or engine; or who shall alter, erase, deface, or hide such marking on such carriage or engine, or any part thereof; or shall fix thereon any false name, place of abode, number, weight, or gauge; or shall refuse to permit, or shall not permit the same to be weighed, measured, or gauged by the Company's servants, is liable in a penalty not exceeding forty shillings for each such offence.

7. The owners of engines or carriages passing or being upon the railway, and walking on any part thereof, are answerable for any trespass, damage, or mischief which may be done by their engines or carriages, or by any of the servants or other persons belonging to or employed by them, without prejudice to the Company's claim against such servants or other persons.

8. No carriage shall carry or bear at any one time upon the railway, including the weight of such carriage, more than five tons, except in any one piece of timber, block, or stone, boiler, cylinderbob, or single piece of machinery, or other single article, which shall, nevertheless, not exceed the weight of eight tons, without the special licence of the Company.

9. Any person who shall run a carriage on the railway which shall not be at all times, and so long as it shall be used, constructed and in such state and condition as the rules and regulations of the Company may at any time require, is liable in a penalty not exceeding ten pounds.

10. Any person who shall bring or use on the railway a locomotive or other engine, or any other moving power, which shall not have been previously examined and approved of by the engineer of the Company, or who, after notice given by the Company, shall not forthwith remove or repair such engine, is liable for each offence in a penalty not exceeding twenty pounds.

11. Any person who shall ride, lead, or drive, or cause to be ridden, led, or driven, or shall aid or assist in leading or driving, or shall permit or suffer to be upon the railway, or any part thereof, any horse, mule or ass, or any cow or other neat cattle, sheep, swine, or any other beast or animal, (except over in directly crossing the same at any roads or places appointed for that purpose, and which he may have been authorised to use,) is liable in a penalty not exceeding five pounds.

12. Any person who shall travel or pass upon foot upon the railway, (except in crossing the railway by any road or footpath on the level thereof,) is liable in a penalty not exceeding ten pounds.

13. Any person who shall throw, place, or wilfully scatter or drop gravel, stone, rubbish, or other matter or thing on any part of the railway; or extinguish any light or lamp set up on or near the railway or other works; or wilfully obstruct or prevent any person in the lawful execution of the Railway Act; or who shall wilfully or maliciously do any act, matter, or thing to obstruct the free passage of the railway, or any part thereof, is liable in a penalty not exceeding ten pounds, in addition to the damage caused thereby.

14. Any person who shall suffer the loading of any carriage using the railway to extend more than thirty inches over and beyond the flange or lip of each or any of the wheels, or any carriage, or any goods or things under his charge to remain on any part of the railway or other works, so as to obstruct the passage or working thereof; or who shall not remove such carriage or goods, or things when required, is liable in a penalty not exceeding forty shillings for every such offence, and a like sum for every hour during which such obstruction shall continue after the making of such request.

15. Any person who shall wilfully or maliciously injure or destroy any part of the railway or works is (over and above the amount of the damage) liable in a penalty not exceeding twenty pounds.

16. Any person found on any part of the railway, or within any of the stations, warehouses, or other premises, in a state of drunkenness, is liable in a penalty not exceeding five pounds, and not less than ten shillings.

BYE-LAWS enacted at their General Meeting, 1841.

I.—As to Passengers, &c.

1. Any person who shall take or occupy a seat in any coach or carriage belonging to the Company without previously booking himself, or shall occupy (without permission) a superior class carriage to that for which he has paid; or shall refuse to show, produce, or deliver up his ticket to the Company's officers; or who shall refuse or neglect to quit a coach or carriage on arriving at the point to which he has paid his fare, is hereby made liable in a penalty of forty shillings.

2. Passengers at the road stations will only be booked conditionally, that is to say, in case there shall be room in the train for which they are booked; if there shall not be room for all so booked, the passengers booked for the longest distance will be allowed the preference. Passengers booked for the same distance will have priority according to the order in which they are booked or number of their tickets.

3. Smoking is strictly prohibited, both in and upon the carriages, and in the Company's stations and other premises. Any passenger smoking is hereby subjected to a fine of forty shillings; and in case of his persisting, after being warned not to do so, he will, in addition to

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the fine, be immediately, or at the first stopping place, removed from the Company's premises.

4. Any passenger or other person committing any nuisance, or wilfully interfering with the comfort of other passengers, obstructing any of the Company's officers in the discharge of their duty, or not attending to the directions of the guard, will be removed from the Company's premises, as soon after the offence as conveniently may be, and shall, in addition to forfeiting his fare, be liable in a fine of forty shillings.

5. Any passenger who shall wilfully cut the lining, remove or deface the number plates, or remove or extinguish any of the lamps on the carriages, break the windows, or otherwise damage any of the Company's carriages, shall be fined five pounds.

6. The Company will not in any case be answerable for luggage, other than and except passengers' articles of clothing, not exceeding forty pounds in weight, or four cubic feet in dimensions, and unless such luggage is distinctly and fully addressed, and unless the passenger to whom it belongs has personally delivered it to the guards; and if such luggage exceeds forty pounds in weight, or four cubic feet of dimensions, the Company will not in any case be answerable for it, unless it has been booked and separately paid for. On booking, a ticket will be given to the owner, and a corresponding ticket affixed to the luggage, and the luggage will only be delivered to the party producing such ticket. The attention of passengers is requested to the legal notices exhibited in the booking offices, and to clause 182 of the Company's Act of Incorporation, limiting the Company's responsibility for luggage or goods booked by any of their carriages.

7. The Company's porters will render every facility to passengers for loading and unloading luggage at the different stations. No fee or gratuity is permitted to be taken by any of the Company's servants, under any circumstances whatever.

II.—As to Goods.

8. Every engine being or working, and every carriage or waggon on the railway, and every engineman, fireman, breaksman, waggoner, and other person belonging to or attending the same, shall be under the direction and control of the Company and their officers and servants as to the times of starting, the speed of travelling, the place of loading or unloading, and in all other respects; and any person in charge of such engine, waggon, or carriage, who shall contravene, neglect, or act without such directions, shall forfeit the sum of two pounds.

9. Any person or persons who shall bring any waggon or waggons on the railway not constructed agreeably to the following dimensions shall forfeit the sum of five pounds, namely, dimensions of waggons, the width between each pair of wheels from inside to inside, and at the base or root of the flange of wheels, shall be four feet five and one-half inches; the flange of the wheels shall be one inch and a quarter broad at the bend or root, and one inch and a quarter deep; the surface of the tire shall, from the base or root of the flange outwards, be on an inclination at the rate of one inch in sixteen inches, and the tire shall consist of best malleable iron: the axles shall be of best malleable iron, and not less than three inches and a half diameter in the shaft: the length of the waggon shall not exceed thirteen feet; the breadth at the top shall not exceed eight feet; and the diameter of the wheels shall not exceed three feet.

10. All tolls or charges for goods shall be paid in advance or on demand, otherwise the goods and waggons shall be detained and sold, as provided for in the Act of Incorporation.

11. All goods and property of every description conveyed by the railway and liable to injury from the weather, or from smoke, sparks, or fire, must be protected therefrom by the owner; and the Company will not be responsible therefore, unless under a special bargain to that effect.

12. No waggon laden with coal, stones, gravel, goods, or general merchandize, shall be allowed to pass along the railway, or any part thereof, on the Sabbath-day. Any contravener of this regulation, besides being liable to stoppage by the servants of the Company, shall be also liable in a penalty of five pounds sterling.

III.—General Regulations.

13. No moving power shall be used or be upon the lines of the railway between the terminus at Edinburgh and the Cowlairs dépôt at Glasgow except locomotive engines.

14. Locomotive engines and trains of carriages and waggons shall always pass along the left-hand line of road, leaving a line on their right-hand uniformly clear, under a penalty of five pounds sterling, besides being liable to prosecution for any damages or accidents caused by their using the wrong line.

15. No person, other than the brakesman, shall be allowed to ride or pass on any luggage waggon or coal waggon; and no person, except the engineman and fireman, shall be allowed to ride on any locomotive engine or tender upon or along the railway without the special licence of the Company from time to time; and the engineman, as well as the person so riding thereon, shall be fined in the sum of two pounds sterling.

16. No engine, or carriage, or waggon shall at any time be left, or be upon the railway, when not in use, under a penalty of five pounds sterling, to be imposed on the person in charge of, and on the owner of such engine or carriage or waggon.

17. No engine, or carriage, or waggon, shall at any time travel or be upon the railway, after dark, without a signal lamp or lamps placed so as to be distinctly visible, and according to regulations, to be from time to time published. The person in charge of an engine, or carriage, or waggon, not having these lamps shall forfeit five pounds, besides being liable in consequential damages.

18. No person shall, without a special licence from the Company, be permitted to sell, or

offer for sale, any liquor, beer, or other articles upon the line of railway; or at any of the stations, under the penalty of two pounds for each offence; and all guards, policemen, porters and others, servants of the Company, are strictly enjoined to remove any person offending against this bye-law, and immediately to give such information as will lead to the infliction of the penalty for so doing.

19. The drivers or conductors of all public coaches, omnibusses, or other carriages that may be admitted into the Company's premises, shall obey every direction or order that may be given them by any of the Company's manager or servants; and every driver or other person refusing to obey such directions or orders shall forfeit and pay the sum of ten shillings for every such refusal.

20. Any person who shall offend against a regulation made by the Company's Act of Incorporation or Amendment Act, and published above, to which regulation no specific penalty is attached, shall forfeit a sum not less than forty shillings and not exceeding five pounds.

IV.—*As to the Servants of the Company.*

21. The officers of the Company receiving salaries shall be bound to inform themselves not only of the statutory regulations and bye-laws published from time to time, but of the provisions of the Act applicable to the Company and the railway generally, and shall conform thereto under a penalty of not less than two pounds and not exceeding five pounds for each offence, without prejudice to the Company's power of suspension or dismissal.

22. The enginemen, firemen, guards, and other inferior servants of the Company, shall conform themselves to any printed or written rules or directions for their guidance, which may from time to time be given them by the manager of the Company, under a penalty of not less than forty shillings, besides being liable to be suspended or dismissed by him.

23. All appointments whatever of officers and servants under the Company shall be held at the pleasure of the Directors; and they shall be liable to dismissal without cause assigned on receiving the following notice; or in lieu thereof, and in the option of the Directors, the proportion of salary or pay equivalent to the following period, viz., superintendents of locomotives and of line, and manager of goods department, three months' notice or three months' pay; superintendent of passengers' booking offices at Edinburgh and Glasgow, delivering clerk of goods at the Edinburgh and Glasgow stations, and the agents of Falkirk and Castlecary stations, two months' notice or two months' pay; all other clerks, superintendents, and agents, one month's notice or one month's pay; all guards, enginemen, and firemen, two weeks' notice or two weeks' pay; all porters and other servants, one week's notice or one week's pay.

The Directors shall have power immediately to dismiss any officer or servant, without any allowance of pay whatever, on such officer or servant being found guilty or convicted by the Company's manager, or any judge or magistrate, of any breach of the bye-laws or rules and regulations of the Company, or of Lord Seymour's Act for regulating railways.

24. No officer or servant of the Company shall be entitled to resign or quit his situation without giving to the Company the same notice as the Company provides for being given to such officer or servant of theirs; but the officers and servants shall not have it in their power to shorten the period of such notices by any payment to the Company, unless with the permission of the Directors.

25. Every officer or servant of the Company shall be bound to obey, and shall be liable to be suspended for negligence or misconduct by his superior officer placed over him by the Company, who shall immediately report such suspension; and, in the event of such suspension being approved of by the Board of Directors at their first or second meeting held after its date, he shall forfeit his salary or wages during its continuance.

26. The Board of Directors shall be sole judges of whether the duties of their officers or servants have been sufficiently communicated to them or not, and whether they have been duly performed or not; if, in their option, they may depute this power in whole or in part to their manager.

Glasgow, November, 1841.

LETTER sent to the Edinburgh and Glasgow Railway Company, relative to the Bye-Laws and Regulations of the Company.

SIR,

Board of Trade, Whitehall, December 14, 1841.

WITH reference to your letter of the 8th December, enclosing a copy of the proposed bye laws and regulations of the Edinburgh and Glasgow Railway Company, for the consideration of the Lords, &c., previously to their being submitted to the general meeting on the 4th of January, I am directed by their Lordships to make the following observations:—

Regulations 1—8 are in conformity with the Company's Act, and appear unobjectionable.

Regulation 9 is also proper, subject to the remarks on the subsequent regulation relative to the construction of carriages.

10, 11. Proper.

12. In terms of the Company's Act, 1 and 2 Vict., c. 58, s. 213; the exception ought to be extended to persons attending carriages under their care, though as horse power is prohibited, this exception will probably remain a dead letter.

13. Wilful and malicious obstruction is made a misdemeanour by the General Act, 3 and 4 Vict., c. 97, s. 15, which supersedes the provisions of the local Act from which this regulation is taken. A notice of the general Act, and of the punishment awarded by it, viz., imprisonment with or without hard labour, for a term not exceeding two years, ought to be substituted.

14—16. Proper.

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BYE Laws enacted at the General Meeting.

It might be proper to term these regulations, as they are obviously of the description which the Directors are empowered to make under the 205th section of the Company's Act, and not bye laws relating to the internal government of the Company, which by the 174th section can only be made by a general meeting of the proprietors.

No. 1. The objects contemplated by this regulation do not appear improper, but the wording is open to several objections. The penalty is absolute, instead of "not exceeding 40 shillings," a defect which has in several cases given rise to doubts as to the power of the magistrate before whom the case is brought, to mitigate the penalty.

The enforcement of the ticket system is not sufficiently distinguished from the prevention of fraud. Their Lordships admit the principle that the ticket is to be considered in the first instance as the sole voucher for payment of fare, but as this system is adopted for the convenience of the Company, and as it renders it inevitable that tickets should be occasionally lost, they consider it proper that the regulation should be so worded as to exclude the possibility of a servant of the Company thinking it his duty to infer fraud from the mere fact of the inability to produce a ticket. The wording of the latter part of the regulation is still more objectionable, as it imposes a penalty on persons neglecting to leave the carriage at the proper place, although it is obvious that such a case might frequently occur, without any intention to defraud. On the whole their Lordships would recommend the substitution for No. 1 the following regulations, which have been proposed in the course of a general revision of the regulations of different railway companies, and which appear to obviate the objections above stated, and at the same time to carry out more effectually the objects which the Company have in view.

(Standard Regulations.—See letter to the North Midland Railway Company, p. 264.)

5. Proper if the words "not exceeding," are inserted before the penalty.

6. As regards luggage above 40 lbs. in weight, the Company are empowered by their Act to charge, and the proposed regulations with regard to booking, and affixing tickets, do not appear improper, provided they are fairly carried out in practice, and facilities are afforded to the public for complying with them. Their Lordships will require some information upon this point before finally deciding.

As regards luggage under 40 lbs., the limitations of the Company's liability contained in the first part of this regulation, amount, in fact, to nothing but a notice, the legal effect of which is very doubtful, and which, if the Directors choose to issue, they must issue upon their own responsibility, and in some other form than that of a regulation requiring the official confirmation of the Board of Trade.

7. Proper.

8. Proper, except the absolute penalty.

9. Ditto, ditto, provided the regulations are properly advertised, and apply equally to the Company's carriages. Information upon these points must be given.

10. Proper.

11. Ditto.

12. Their Lordships must suspend any opinion upon this regulation until they have had the advice of counsel as to its legality.

13—20. Proper, except that the penalties are absolute.

Their Lordships have further to observe, that, &c. (as in the letter to the North Midland of the 13th December, p. 264.)

The remaining regulations, applying exclusively to servants of the Company do not fall within their Lordships' jurisdiction.

I am, &c.,

S. LAING.

The Secretary of the Edinburgh and Glasgow
Railway Company.

In reply to Letter from this Office of the 14th December. Also enclosing copy of the Bye-Laws of the Company, &c.

SIR,

Head Office, N. Queen Street, Glasgow, December 30, 1841.

I BEG to acknowledge receipt of your letter of the 14th instant, and to express the thanks of the Directors of the Edinburgh and Glasgow Railway Company, that the Lords of the Committee of the Board of Trade should have politely consented to state their views on the bye laws proposed to be passed for regulating the working of the railway before they were actually passed. By doing so they have enabled me to perfect these bye laws, and the copy which I now enclose has been altered in a way which I trust will appear satisfactory, on a perusal of the following explanations in answer to the remarks sent me.

ABSTRACT of Penalties imposed by Act.

Regulation 9. It is not proposed to publish this regulation otherwise than by hanging it up in every office on the railway, and I hope this extent of publication will be thought sufficient when it is kept in view that there are at present no carriages constructed for the line, and that before constructing them every one will have an opportunity of consulting the regulation.

Regulation 12. The alteration here suggested has been made, but it will, as anticipated, remain a dead letter.

Regulation 13. The Act 3 and 4 Vict. cap. 97, is found very defective in practice; some of

the objections to it as applicable to Scotland, will be found in the notes accompanying this letter. It is therefore thought expedient to retain the clause of the Act of Incorporation here referred to, which is not annulled by the General Act. This last can be founded on in any prosecution, if thought advisable without being published.

BYE-LAWS to be passed at General Meeting.

The bye-laws will be passed both under clause 174 and under clause 205 ; but the difficulty stated has been obviated by heading them as "bye-laws, rules, and regulations."

I. The intention of the Directors in affixing a specific penalty to the infraction of this and other bye-laws, was to force the judge either to award the full sum or to find the accused not guilty. Much evil has arisen on other Scotch lines from the leniency of sheriffs and justices of the peace who, after the clearest evidence of guilt, think it sufficient to impose a fine of 5s. or dismiss the party with a reprimand. This has both prevented many very proper prosecutions by railway companies who grudge the expense they are put to for the public benefit without advantage, and has acted as an incentive to workmen and others setting their rules at defiance. In deference, however, to their Lordships, and after this explanation of their views, the power of modifying the penalty has been vested in the judge by the words now used.

The bye law itself has also been altered by substituting the two recommended by their Lordships in place of the one proposed to be passed ; and a few words have been added to meet their wishes as expressed at the close of the remarks.

No. 3 of former copy, No. 4 of present. The bye-law suggested by their Lordships as to smoking has been substituted for that proposed to be passed.

No. 4 of former copy, No. 5 of present. The bye-law suggested by their Lordships has been substituted for that proposed to be passed.

No. 5 of former copy, No. 6 of present, is altered as suggested.

No. 6 of former copy, No. 7 of present. I am instructed by the Board to assure their Lordships that every facility will be afforded the public for booking and paying for passengers' luggage exceeding 40 lbs. weight. It will form part of their business to convey such luggage, and even under the bye-law every one will be entitled to demand that it should be received.

The Directors are quite aware that the regulation, so far as it regards luggage below 40 lbs. weight, cannot limit their responsibility as carriers under the general law of the land, except so far as it is a regular notice to the passengers ; but the difficulty in such cases is always to prove the publication of the notice, and the Directors think it would benefit them much if the publication were in the bye-laws, which are always hung up, and are more constantly referred to than other papers. They trust, therefore, that their Lordships will not disallow this part of the regulation, but be satisfied with intimating their opinion that it will not of itself limit the Company's responsibility. This is the course which it is understood they have adopted in other similar cases.

No. 8 of former copy, No. 9 of present. Altered as suggested.

No. 9 of former copy, No. 10 of present. The observation made in reference to regulation No. 9 of Act, applied to this.

No. 12 of former copy, No. 13 of present. This regulation is withdrawn.

Nos. 13—20 are altered as recommended.

The Directors have made an addition to No. 2 of the bye-laws, in order to embody the principal instructions to the officers recommended by their Lordships. It seems expedient that passengers should know them.

The only instruction omitted regards the power of detention of offenders, which their Lordships seem to be under the impression is vested in railway officers, where an offence is committed against the bye-laws. On this point, as well as to show the defective powers committed to the Companies, I beg to refer you also to the notes accompanying this letter.

It will give me great satisfaction to learn that the bye laws as now altered meet with your approbation ; and I would esteem it a particular favour if you could without inconvenience state your approval or disapproval of them in the course of this week, as a special general meeting of the shareholders has been called to pass them on Tuesday next ; and I should be glad to have them in a shape which would meet the wishes of the Board of Trade, and would not require correction.

I am, &c.,

S. Laing, Esq.,
&c. &c.

H. G. WRIGHT, Secretary.

LETTER sent to the Edinburgh and Glasgow Railway Company, in reply to letter of the 30th December, relative to the Rules and Regulations of the Company.

SIR,

Board of Trade, Whitehall, January 1, 1842.

I AM directed, &c. to inform you that their Lordships approve of the amended code of bye-laws and regulations transmitted with your letter of the 30th December, with the exception of the first part of the regulation relative to passengers' luggage below 40 lbs. weight. With regard to this their Lordships must repeat the objection stated in my former letter, that it would be improper to hold forth to the public as a regulation sanctioned by the Board of Trade, what is in fact a mere notice of doubtful legal effect. Their Lordships are not prepared to give a decided opinion that it would be legal and reasonable that the Company should in no case be responsible for luggage, which was not distinctly addressed, and personally delivered to the guard by the passenger to whom it belongs. Indeed, the latter provision would be obviously unreasonable in many cases that may be easily conceived, as where a gentleman's luggage was given to the guard by his servant, or the luggage of a party or family given to

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the guard by one individual who had the charge of it. Generally speaking it would appear proper that if the Company's servants do actually take charge of any luggage, the Company ought to incur the ordinary responsibility of carriers. However, as stated in my former letter, their Lordships' jurisdiction over the bye-laws and regulations which impose penalties on the public does not extend to any notice which the Directors think fit to publish on their own responsibility in any manner which they think best calculated to ensure publicity, provided it be published distinctly as a notice, and not in a form which may lead the public to infer that it is published by authority of the Board of Trade. With regard to the latter part of the same regulation, it must be distinctly understood that their Lordships' confirmation depends on the assurance that it is intended to enforce the practice of booking, and to afford the public ample facility for that purpose; I may further mention that the rule here laid down with regard to regulations affecting passengers' luggage will be applied uniformly to other railways.

With regard to the regulation No. 12, prohibiting goods-traffic on the Sabbath day, their Lordships wish it to be understood that they do not object to it, having been advised that it is not inconsistent with the law of Scotland.

The remarks relative to the defects of Lord Seymour's and of the Company's Act shall receive their Lordships' attentive consideration.

I am, &c.,

S. LAING.

The Secretary of the Edinburgh and Glasgow
 Railway Company.

In reply to Letter from this Office of the 1st instant, and enclosing Amended Code of Bye-Laws, &c.

SIR,

Glasgow, January 15, 1842.

WITH reference to your letter of the 1st instant, I now beg to transmit a printed copy of the bye-laws, rules, and regulations enacted by a special general meeting of the Edinburgh and Glasgow Railway Company, on the 4th instant. The Directors will be happy to learn that the code as now amended meets with the approbation of the Lords of the Committee of Privy Council of Trade.

I have, &c.,

H. G. WRIGHT, Secretary.

S. Laing, Esq.,
 &c. &c.

LETTER sent to the Edinburgh and Glasgow Railway Company, confirming their Code of Amended Bye-Laws, &c.

Board of Trade, Whitehall, January 18, 1842.

I AM directed, &c. to convey to you in terms of the Act 3 and 4 Vict. c. 97, their Lordships' confirmation of the code of bye-laws, rules, and regulations of the Edinburgh and Glasgow Railway Company, agreed to at the general meeting of the proprietors on the 4th of January, 1842.

I am, &c.,

S. LAING.

The Secretary of the Edinburgh and Glasgow
 Railway Company.

ABSTRACT of Regulations made and Penalties imposed by the Company's Act of Incorporation and Amendment Act, so far as the same do not regard the Servants of the Company.

I. Any person neglecting to shut and fasten a gate set up at either side of the railway, after passing through the same with the carriages, cattle, or other animals, or things under his care, is liable in a penalty not exceeding 40s.

II. Any person who shall send, or cause to be sent, by the railway any aquafortis, oil of vitriol, gunpowder, or other goods of a dangerous quality, and who shall not distinctly mark the nature of such goods on the outside of the package containing the same, or otherwise give notice thereof in writing to the book-keeper, or other servant of the Company, with whom the same shall be left, is liable to a penalty not exceeding 10l.

III. Any person art and part in defacing or destroying any board, or the stones or marks set up to denote distances on the railway, is liable in a penalty not exceeding 5l.

IV. Any person who shall neglect or refuse to give a true account in writing, signed by him, to the collectors of the rates or tolls, at the places where they shall attend for that purpose, stating the quantity of goods, or other things which shall be in or upon the carriages belonging to him or under his care, and stating from whence such carriages were brought, and where the same are intended to be unloaded, or left, or taken off the railway, and stating whether such goods, or other things shall be liable to the payment of different rates or tolls, and if so, specifying the respective quantities liable to each or any of the rates or tolls; and any person who shall neglect or refuse to produce a bill of lading to any collector demanding the same, or shall give a false account, or shall leave, or deliver out, or take off any part of his lading or goods, at any other place than what is mentioned in such account, is liable to pay the Company any sum not exceeding 40s. for every ton of goods, or for any parcel not exceeding one hundred weight, and so in proportion to any less quantity than a ton or one hundred weight.

V. Any person who shall refuse or neglect on demand to pay the rates, tolls, or other sums due in respect of goods, articles, or other things carried along the railway, to the collectors appointed to receive the same, is liable to have the said goods, articles, or other things detained, until such payment shall be made, with all reasonable charges for the seizure and detention; and if such goods, articles, and things shall not be redeemed within 21 days from the taking thereof, the same shall be sold, and such rates, tolls, sums, and charges, satisfied thereout.

VI. Every owner, or other person who shall have the care of any carriage or engine, or who shall conduct the same on the railway, and who shall not have such carriage or engine previously weighed, measured, and gauged, and the weight, measure, and gauge thereof, together with the number thereof, and also the number and place of abode of the owner thereof, entered with the secretary or clerk, or other officer of the Company appointed for that purpose, or without having such name, place of abode, number, weight, and gauge marked upon each such carriage or engine, or who shall alter, erase, deface, or hide such marking on such carriage or engine, or any part thereof, or shall fix thereon any false name, place of abode, number, weight, or gauge, or shall refuse to permit, or shall not permit the same to be weighed, measured, or gauged by the Company's servants, is liable in a penalty not exceeding 40s. for each such offence.

VII. The owners of engines or carriages passing or being upon the railway, and working on any part thereof, are answerable for any trespass, damage, or mischief which may be done by their engines or carriages, or by any of the servants, or other persons belonging to or employed by them, without prejudice to the Company's claim against such servants or other persons.

VIII. No carriage shall carry or bear at any one time upon the railway, including the weight of such carriage, more than five tons, except in any one piece of timber, block, or stone, boiler, cylinder-bob, or single piece of machinery, or other single article, which shall, nevertheless, not exceed the weight of eight tons, without the special licence of the Company.

IX. Any person who shall run a carriage on the railway, which shall not be at all times, and so long as it shall be used, constructed and in such state and condition as the rules and regulations of the Company may at any time require, is liable in a penalty not exceeding 10l.

X. Any person who shall bring, or use on the railway, a locomotive or other engine, or any other moving power, which shall not have been previously examined and approved of by the engineer of the Company, or who, after notice given by the Company, shall not forthwith remove or repair such engine, is liable, for each offence, in a penalty not exceeding 20l.

XI. Any person who shall ride, lead, or drive, or cause to be ridden, led, or driven, or shall aid or assist in leading or driving, or shall permit or suffer to be upon the railway, or any part thereof, any horse, mule, or ass, or any cow or other neat cattle, sheep, swine, or any other beast or animal (except in directly crossing the same at any roads or places appointed for that purpose, and which he may have been authorized to use), is liable in a penalty not exceeding 5l.

XII. Any person who shall travel or pass upon foot upon the railway (except in crossing the railway by any road or footpath on the level thereof, or attending carriages under his care), is liable in a penalty not exceeding 10l.

XIII. Any person who shall throw, place, or wilfully scatter or drop gravel, stone, rubbish, or other matter or thing, on any part of the railway, or extinguish any light or lamp set up on or near the railway or other works, or wilfully obstruct or prevent any person in the lawful execution of the Railway Act, or who shall wilfully or maliciously do any act, matter, or thing to obstruct the free passage of the railway, or any part thereof, is liable in a penalty not exceeding 10l., in addition to the damage caused thereby.

Note.—Persons wilfully obstructing any engine or carriage, or endangering the safety of persons in or upon the same, are liable, under the Act 3 and 4 Vic. cap. 97, sec. 15, to two years' imprisonment, with or without hard labour.

XIV. Any person who shall suffer the loading of any carriage using the railway, to extend more than 30 inches over and beyond the flange or lip of each or any of the wheels, or who shall suffer any carriage, or any goods or things under his charge, to remain on any part of the railway or other works, so as to obstruct the passage or working thereof, or who shall not remove such carriage, or goods, or things, when required, is liable in a penalty not exceeding 40s. for each such offence, and a like sum for every hour during which such obstruction shall continue after the making of such request.

XV. Any person who shall wilfully or maliciously injure or destroy any part of the railway or works, is (over and above the amount of the damage) liable in a penalty not exceeding 20l.

XVI. Any person found on any part of the railway, or within any of the stations, warehouses, or premises, in a state of drunkenness, is liable in a penalty not exceeding 5l., and not less than 10s.

BYE-LAWS, Rules, and Regulations, enacted at their General Meeting, on the 4th day of January, 1842.

1. *As to Passengers, &c.*

I. No passenger will be allowed to take his seat in or upon any of the Company's carriages, or to travel therein upon the said railway, without having first booked his place and paid his fare. Each passenger booking his place, will be furnished with a ticket, which he is to show when required by the guard in charge of the train, and to deliver up before leaving the Company's premises, upon demand, to the guard or other servant of the Company duly authorized

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to collect tickets. Each passenger not producing or delivering up his ticket as aforesaid, will be required to pay the fare from the place whence the train originally started,

II. Every person attempting to defraud the Company, by riding in or upon any of the Company's carriages, without having previously paid his fare; or, by riding in or upon a carriage of a higher class than that for which he has booked his place; or, by continuing his journey in or upon any of the Company's carriages beyond the destination for which he has paid his fare; or, by attempting in any other manner whatever to evade the payment of his fare, is hereby subjected to a penalty not exceeding 40s. But it shall be in the power of the Company's agent, at the station where the passenger leaves the train, to remit both the above penalty and return the extra fare, in all cases where he shall be satisfied that there was no intention to defraud the Company, or that, from other circumstances, the infliction of the fine and exaction of the extra fare, would be attended with great hardship, and might be dispensed with; and it shall be his duty to examine into these particulars without delay.

III. Passengers at the road stations, will only be booked conditionally; that is to say, in case there shall be room in the train for which they are booked. If there shall not be room for all so booked, the passengers booked for the longest distance will be allowed the preference. Passengers booked for the same distance, will have priority according to the order in which they are booked, or number of their tickets.

IV. Smoking is strictly prohibited both in and upon the carriages, and in the Company's stations. Every person smoking in a carriage is hereby subjected to a penalty not exceeding 40s.; and every person persisting in smoking in a carriage or station, after being warned to desist, shall, in addition to incurring a penalty not exceeding 40s., be immediately, or if travelling, at the first opportunity, removed from the Company's premises, and forfeit his fare.

V. Any person found in the Company's carriages or stations in a state of intoxication, or committing any nuisance, or otherwise wilfully interfering with the comfort of other passengers, and any person obstructing any of the Company's officers in the discharge of their duty, is hereby subjected to a penalty not exceeding 40s., and shall immediately, or if travelling, at the first opportunity, be removed from the Company's premises, and forfeit his fare.

Note.—Persons wilfully obstructing the Company's officers, in cases where personal safety is concerned, are liable, under the Act 3 and 4 Vic., c. 97, s. 16, to be apprehended and fined 5*l.*, with two months' imprisonment in default of payment.

VI. Any passenger who shall wilfully cut the lining, remove or deface the number plates, or remove or extinguish any of the lamps on the carriages, break the windows, or otherwise damage any of the Company's carriages, shall be liable to a penalty not exceeding 5*l.*

VII. The Company will not in any case be answerable for luggage other than and except passengers' articles of clothing, not exceeding 40 pounds in weight, or four cubit feet in dimensions; and if such luggage exceed 40 pounds in weight, or four cubic feet of dimensions, the Company will not be answerable for it, unless it has been booked and separately paid for. On booking, a ticket will be given to the owner, and a corresponding ticket affixed to the luggage; and the luggage will only be delivered to the party producing such ticket. The attention of passengers is requested to the legal notices exhibited in the booking offices, and to clause 183 of the Company's Act of Incorporation, limiting the Company's responsibility for luggage or goods booked by any of their carriages.

VIII. The Company's porters will render any facility to passengers for loading and unloading luggage at the different stations. No fee or gratuity is permitted to be taken by any of the Company's servants, under any circumstances whatever.

2. As to Goods.

IX. Every engine being or working, and every carriage or waggon on the railway, and every engine-man, fireman, breaksman, waggoner, and other person belonging to or attending the same, shall be under the direction and control of the Company and their officers and servants, as to the times of starting, the speed of travelling, the place of loading and unloading, and in all other respects; and any person in charge of such engine, waggon, or carriage, who shall contravene, neglect, or act without such directions, shall forfeit a sum not exceeding 2*l.*

X. Any person or persons who shall bring any waggon or waggons on the railway, not constructed agreeably to the following dimensions, shall forfeit a sum not exceeding 5*l.*, viz. dimensions of waggons—the width between each pair of wheels from inside to inside, and at the base or root of the flange of wheels, shall be four feet five and one half inches. The flange of the wheels shall be one and a quarter inches broad at the base or root, and one and a quarter inches deep. The surface of the tyre shall, from the base or root of the flange outwards, be on an inclination at the rate of one inch in sixteen inches, and the tyre shall consist of best malleable iron. The axles shall be of the best malleable iron, and not less than three and one-half inches diameter in the shaft. The length of the waggon shall not exceed 13 feet; the breadth at the top shall not exceed eighth feet; and the diameter of the wheels shall not exceed three feet.

XI. All tolls or charges for goods shall be paid in advance, or on demand, otherwise the goods and waggons shall be detained and sold, as provided for in the Act of Incorporation.

XII. All goods and property of every description conveyed by the railway, and liable to injury from the weather, or from smoke, sparks, or fire, must be protected therefrom by the owner; and the Company will not be responsible therefore, unless under a special bargain to that effect.

XIII. No waggon laden with coal, stone, gravel, goods, or general merchandise, shall be allowed to pass along the railway, or any part thereof on the Sabbath-day. Any contravener of this regulation, besides being liable to stoppage by the servants of the Company, shall be also liable in a penalty not exceeding 5*l.* sterling.

3. *General Regulations.*

XIV. No moving power shall be used, or be upon the lines of railway between the terminus at Edinburgh and the Cowlairs Depôt at Glasgow, except locomotive engines.

XV. Locomotive engines and trains of carriages and waggons shall always pass along the left-hand line of road, leaving a line on their right hand uniformly clear, under a penalty on the person in charge and owner thereof not exceeding 5*l.* sterling, besides being liable to prosecution for any damages or accidents caused by their using the wrong line.

XVI. No person other than the breaksman shall be allowed to ride or pass on any luggage-waggon or coal-waggon; and no person, except the engine-man and fireman, shall be allowed to ride on any locomotive engine or tender, upon or along the railway, without the special licence of the Company from time to time; and the engine-man, as well as the person so riding thereon, shall be fined in a sum not exceeding 2*l.* sterling.

XVII. No engine, or carriage, or waggon shall at any time be left or be upon the railway when not in use, under a penalty not exceeding 5*l.* sterling, to be imposed on the person in charge of, and on the owner of such engine, or carriage, or waggon.

XVIII. No engine, or carriage, or waggon shall at any time travel or be upon the railway after dark without a signal-lamp or lamps, placed so as be distinctly visible, and according to regulations to be from time to time published. The person in charge of an engine, or carriage, or waggon not having these lamps shall forfeit a sum not exceeding 5*l.*, besides being liable in consequential damages.

XIX. No person shall without a special licence from the Company be permitted to sell, or offer for sale, any liquors, beer, or other article upon the line of railway, or at any of the stations, under a penalty not exceeding 2*l.* for each offence; and all guards, policemen, porters, and others, servants of the Company, are strictly enjoined to remove any person offending against this bye-law, and immediately to give such information as will lead to the infliction of the penalty for so doing.

XX. The drivers or conductors of all public coaches, omnibusses, or other carriages that may be admitted into the company's premises shall obey every direction or order that may be given them by any of the Company's managers or servants; and every driver or other person disobeying such directions or orders shall forfeit and pay a sum not exceeding 10*s.* for every contravention thereof.

XXI. Any person who shall offend against a regulation made by the Company's Act of Incorporation or Amendment Act, and published above, to which regulation no specific penalty is attached, shall forfeit a sum not exceeding 5*l.*

4. *As to the Servants of the Company.*

XXII. The officers of the Company receiving salaries shall be bound to inform themselves not only of the statutory regulations and bye-laws published from time to time, but of the provisions of the Acts applicable to the Company, and to railways generally, and shall conform thereto, under a penalty of not less than 2*l.*, and not exceeding 5*l.*, for each offence, without prejudice to the Company's power of suspension or dismissal.

XXIII. The engine-man, fireman, guards, and other inferior servants of the Company shall conform themselves to any printed or written rules or directions for their guidance, which may from time to time be given them by the manager of the Company, under a penalty of not less than 40*s.*, besides being liable to be suspended or dismissed by him.

XXIV. All appointments whatever of officers and servants under the Company shall be held at the pleasure of the Directors, and such officers and servants shall be liable to dismissal, without cause assigned, on receiving the following notice, or in lieu thereof, and in the option of the Directors, the proportion of salary or pay equivalent to the following period, viz., superintendents of locomotives and of line, and manager of goods' department, three months' notice or three months' pay; superintendents of passengers' booking-offices at Edinburgh and Glasgow, delivery clerks of goods at Edinburgh and Glasgow stations, and the agents at Falkirk and Castlecary stations two months' notice or two months' pay; all other clerks, superintendents, and agents one month's notice or one month's pay; all guards, engine-men, and firemen two weeks' notice or two weeks' pay; all porters and other servants one week's notice or one week's pay.

XXV. The Directors shall have power immediately to dismiss any officer or servant, without any allowance of pay whatever, on such officer being found guilty, or convicted by the Company's manager, or any judge or magistrate, of any breach of the bye-laws, or rules and regulations of the Company, or of Lord Seymour's Act for regulating Railways, 3 and 4 Vic., cap. 97, or of any Act of Parliament which may hereafter be passed for regulating railways.

XXVI. No officer or servant of the Company shall be entitled to resign or quit his situation without giving to the Company the same notice as the Company provides for being given to such officer or servant of theirs; but the officers and servants shall not have in their power to shorten the period of such notices, by any payment to the Company, unless with the permission of the Directors.

XXVII. Every officer or servant of the Company shall be bound to obey, and shall be liable to be suspended for negligence or misconduct, by his superior officer placed over him by the Company, who shall immediately report such suspension; and, in the event of such suspension being approved of by the Board of Directors, at their first or second meeting held after its date, he shall forfeit his salary or wages during its continuance.

XXVIII. The Board of Directors shall be sole judges of whether the duties of their officers or servants have been sufficiently communicated to them or not, and whether they

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have been duly performed or not, or, in their option, they may depute this power in whole or in part to their manager.

Signed and sealed with the corporate seal of the Company, by order, and in presence of the general meeting of the proprietors this 4th day of January, 1842.

JOHN LEADBETTER, Chairman.

No. 11.

No. 11.
Birmingham and
Gloucester.

BIRMINGHAM AND GLOUCESTER RAILWAY.

TRANSMITTING an amended Code of Bye-laws, &c.

SIR,

Birmingham, December 22, 1841.

I SHALL be obliged by your laying before their Lordships of the Board of Trade the bye-laws of this Company as amended, and to which an early notification of their approval will be esteemed a favour.

I am, &c.,

S. Laing, Esq.,
&c. &c.

GEORGE KING.

AMENDED CODE OF BYE-LAWS.

1. No person will be allowed to travel upon the railway without having first paid his fare and received a ticket, which is to be produced when required, and to be delivered up at end of journey. Passengers at road stations will be only booked conditionally that there be room when the train arrives; those for the longest distance to have the preference; those for an equal distance to have priority according to the order in which they are booked.

2. Any passenger found in or upon any of the Company's carriages without having previously procured a ticket, shall be liable to pay the fare from the place whence the train originally started.

Any passenger occupying a carriage of superior class to that for which he has obtained a ticket, shall be liable to pay, in addition to the sum he has already paid, the fare by such class carriage from the station from which he started. And any passenger proceeding beyond the place for which he has taken a ticket, without previously apprizing the guard of his intention, shall be liable to pay in addition to the sum he has already paid, the full fare from the station from which he started.

3. Any passenger who shall refuse to produce or deliver up his ticket, when required to do so by the guard, or other officer having the charge of collecting the tickets, shall be chargeable with the full fare from the place from which the train first started.

4. Smoking is strictly prohibited, either in, or upon the carriages, or upon the Company's premises. Any passenger smoking after being warned not to do so, will be removed from the Company's premises, his fare forfeited, and he will be liable, in addition, to a fine not exceeding 40s.

5. Any person, in a state of intoxication, or committing any nuisance, wilfully interfering with the comfort of passengers, or not attending to the instructions of the guard, where his own safety or that of any of the passengers is concerned, will be removed from the Company's premises; or if travelling at the time, at the first stopping place, or as soon as conveniently may be, and his fare will be forfeited; and he will be liable, in addition, to a fine not exceeding 40s.

6. Any passenger, who shall wilfully damage or destroy any of the Company's property, shall be fined in a sum not exceeding 5*l.* in addition to the cost of making good the damage. All accidental damage shall be paid for by the party doing it.

7. Dogs will not be permitted to accompany passengers in the carriages, but will be conveyed separately; and they will in all cases be charged for.

By the Act 3 and 4 Vict. c. 97, any person wilfully obstructing or impeding any officer in the discharge of his duty, or trespassing upon the railway, is liable to a penalty of 5*l.*, or, in default of payment, two months' imprisonment.

SIMILAR Letters written as to the North Midland Railway Company. See p. 264.

TRANSMITTING Copy of the Regulations of the Company.

SIR,

Birmingham, January 5, 1842.

I NOW forward the proposed regulations of this Company in regard to passengers by the Birmingham and Gloucester Railway, and the directions intended to be issued to the chief clerk at each station in reference thereto; the whole being in strict conformity with, indeed a verbatim copy of, the regulations which you were pleased to furnish.

In communicating the sanction of their Lordships of the Board of Trade thereto, will you be pleased at the same time to inform me whether in cases of an infringement of the regulations, the Company will be authorized in at once taking the party before a magistrate, or the hour being unreasonable, to detain him till a convenient hour. I am not aware of any Act which gives the Company that power; and it therefore appears to me that any person not disposed

to give his address, or who, having given his address, moves beyond reach of a summons, cannot be affected by these regulations, which will therefore, in every case, (almost without exception,) be utterly useless.

Requesting the favour of some information on this point.

S. Laing, Esq.,
&c. &c.

I have, &c.,

GEORGE KING.

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Gloucester.

Copy of the Regulations of the Company.

1. No passenger will be allowed to take his seat in or upon any of the Company's carriages, or to travel therein upon the said railway without having booked his place and paid his fare.

Each passenger booking his place will be furnished with a ticket, which he is to show when required by the guard in charge of the train, and to deliver up before leaving the Company's premises, upon demand, to the guard, or other servant of the Company duly authorized to collect tickets.

Each passenger not producing or delivering up his ticket as aforesaid, will be required to pay the fare from the place whence the train originally started.

2. Passengers at road stations will be only booked conditionally that there be room when the train arrives; those for the longest distance to have the preference; those for an equal distance to have priority according to the order in which they are booked.

3. Every person attempting to defraud the Company by riding in or upon any of the Company's carriages without having previously paid his fare, or by riding in or upon a carriage of a higher class than that for which he has booked his place, or by continuing his journey in or upon any of the Company's carriages beyond the destination for which he has paid his fare, or by attempting in any other manner whatever to evade the payment of his fare, is hereby subjected to a penalty not exceeding forty shillings.

4. Smoking is strictly prohibited, both in and upon the carriages, and in the Company's stations. Every person smoking in a carriage is hereby subjected to a penalty not exceeding forty shillings; and every person persisting in smoking in a carriage or station, after being warned to desist, shall, in addition to incurring a penalty not exceeding forty shillings, be immediately, or if travelling, at the first opportunity, removed from the Company's premises, and forfeit his fare.

5. Any person found in the Company's carriages in a state of intoxication, or committing any nuisance, or otherwise wilfully interfering with the comfort of other passengers, and any person obstructing any of the Company's officers in the discharge of their duty, is hereby subjected to a penalty not exceeding forty shillings, and shall immediately, or if travelling, at the first opportunity, be removed from the Company's premises, and forfeit his fare.

Note.—Persons wilfully obstructing the Company's officers in cases where personal safety is concerned, and persons wilfully trespassing upon the railway or premises of the Company, are liable, under the 3rd and 4th Vict. c. 97, s. 16, to be apprehended and fined five pounds, with two months' imprisonment in default of payment.

6. Any passenger who shall wilfully damage or destroy any of the Company's property shall be fined in a sum not exceeding five pounds, in addition to the cost of making good the damage. All accidental damage shall be paid for by the party doing it.

7. Dogs will not be permitted to accompany passengers in the carriages, but will be conveyed separately, and they will in all cases be charged for.

INSTRUCTIONS to the Head Clerk at each Station in reference to the Bye-laws or Regulations of the Company which affect Passengers.

1. A discretionary power is lodged with the head clerk at each station of remitting the payment of the fare required by the first regulation in cases where he has reason to believe that the ticket has been really lost, and that it will be a great hardship on the party to insist on the payment.

2. All cases where the ticket is said to have been lost are to be promptly investigated by him, and if the assertion is found to be correct, the extra fare is to be given up. The power of detaining the party is to be exercised with great caution, and never where his address is known or adequate security given for his appearance to answer the charge.

3. In all cases where the party is detained, information is to be immediately given to the superior officers of the Company, and the offender to be taken before a magistrate as soon as possible.

LETTER sent to the Birmingham and Gloucester Railway Company confirming their Amended Code of Regulations.

SIR,

Board of Trade, Whitehall, 7th January, 1842.

I AM directed, &c. to convey to you their Lordships' confirmation of the amended Code of Regulations of the Birmingham and Gloucester Railway Company, transmitted with your letter of the 5th January.

With reference to the question respecting the power of the Company to apprehend offenders against these regulations, their Lordships cannot undertake to interpret a question of law, but they understand that the practical construction put by most Railway Companies upon the

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clauses corresponding to sections 197 and 215 of the Company's Act, 6th William IV., c. 14; has been that the Company's officers are authorized to detain offenders against the regulations of the Company properly made and sanctioned under the Act, as well as against the specific enactments of the Act.

I am, &c.

S. LAING.

The Secretary of the
Birmingham and Gloucester Railway Company.

No. 12.
Branding Junction.

No. 12.

BRANDLING JUNCTION RAILWAY.

TRANSMITTING Return of Prosecutions by the Company, and Copy of Rules and Regulations.

SIR,

Gateshead, December 20, 1841.

ENCLOSED is a copy of bye-laws and regulations, agreed to at the last half-yearly general meeting of the Company, which I will thank you to lay before the said Lords of Privy Council for their sanction and approval.

I am, &c.

S. Laing, Esq.
&c. &c.

JOHN REWCASTLE, Clerk to the Company.

ORDERS and Regulations relating to Travellers passing upon the said Railway, and for preventing the smoking of Tobacco and the commission of any other nuisance in or upon any of the Carriages, or in or upon any of the stations or premises occupied by or belonging to the said Company, of which all persons whom it may concern are hereby required to take notice.

1. All passengers are required, upon booking their places, to take a ticket, and to produce the same (if required) previously to taking their seats in or upon any of the Company's carriages, and to deliver up the same previous to quitting the Company's premises; and any person refusing to produce or deliver up such ticket when required by the Company's officer, is hereby made subject to a penalty not exceeding twenty shillings.

2. Passengers at the road stations will only be booked conditionally (that is to say), in case there shall be room in the train for which they are booked. In case there shall not be room for all the passengers booked, those booked for the longest distance shall have the preference and those booked for the same distance shall have priority according to the order in which they are booked.

3rd. Any passenger riding in a first-class carriage, having paid his fare for a second class carriage only, shall pay the difference in the fare, and is also made liable to a penalty not exceeding twenty shillings.

4. Smoking is strictly prohibited both in the Company's carriages and stations. Any person persisting in smoking, when warned not to do so, is hereby subjected to a penalty not exceeding forty shillings; and in case of his persisting, after a second warning, he will immediately, or if travelling, at the first stopping place, be removed from the Company's premises and forfeit his fare.

5. Any passenger in a state of intoxication committing any nuisance, or wilfully interfering with the comfort of other passengers, obstructing any of the Company's officers in the discharge of their duty, or not attending to the directions of such officers when the personal safety of himself or any of the passengers is concerned, will be immediately removed from the Company's premises, or in case the train shall be moving at the time, then at the next station, or as soon after the offence as may be, and shall forfeit his fare, and is also made liable to a penalty not exceeding forty shillings.

6. Any passenger wilfully cutting the linings, removing or defacing the number plates, breaking the windows, or otherwise damaging or injuring any of the Company's carriages, shall forfeit and pay a sum not exceeding five pounds in addition to the amount of damage done.

JOHN REWCASTLE, Clerk to the Company.

SIMILAR Letter written as to the North Midland, p. 264 13th December.
Standard regulations adopted by the Company and confirmed 22nd January, 1842.

No. 13.
North Midland.

No. 13.

NORTH MIDLAND RAILWAY.

LETTER sent to the North Midland Railway Company relative to their requiring a document to be signed by persons conveying Carriages on the line to exempt the Company from liability for damage.

SIR,

Board of Trade, October 20, 1841.

A REPRESENTATION having been made to the Lords, &c., to the effect that the officers of the North Midland Railway Company, at the Masbro' station, have refused to allow a

carriage to be carried upon their railway unless the owner of the carriage consented to sign a document purporting to relieve the Company from liability for damage of every description, I am directed by their Lordships to inquire whether any regulation or order to that effect exists, and what is the practice pursued with regard to carriages upon the North Midland Railway?

The Secretary to the
North Midland Railway Company.

I am, &c.
S. LAING.

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Orders, &c.
No. 13.
North Midland;

IN reply to Letter of the 20th October relative to the conveyance of Carriages, &c.,
on the line.

SIR, Secretary's Department, Derby, October 30, 1841.

REFERRING to your communication of the 20th instant, I have inquired into the circumstances of the case therein stated, and have referred to the proper officer of the Company for an explanation. I inclose you his report, and have further to add, that I have likewise personally investigated the matter myself, and that the clerk at Masbro' assures me he did not refuse to allow a carriage to be put on the train, but only requested the party concerned to sign the declaration. In doing this, however, he was in error, but not intentionally so; strict orders, or rather a particular explanation of the regulation, have now been issued for the discontinuance of the practice.

I beg to remark that the same investigation and explanation of this affair would have taken place if the party aggrieved had applied to the Board of Directors, through me, in the first instance.

S. Laing, Esq.
&c. &c.

I am, &c.
H. PATTESON, Secretary.

MY DEAR SIR,

Superintendent's Office, Derby,
October 30, 1841.

I SEND you herewith Mr. Binger's statement as to our practice with regard to horses and carriages. From the extract from ticket, you will perceive that it only refers to horses. Some of the clerks have been in the habit of inserting the word carriage, and then making the party sign; this, however, is irregular, and is ordered to cease.

H. Patteson, Esq.,
&c. &c. &c.

I am, &c.
W. HANSON.

No.

Memorandum

to

Station.

o'clock Train,

day, the 29th day of October, 1841.

MR. CLAYE was in error in asking for a signature for a carriage; the regulation only refers to horses, viz. :—

"This ticket is issued subject to the owners undertaking all risk of conveyance whatsoever, as the Company will not be responsible for any injury or damage (however caused) occurring to horses while travelling, or in loading or unloading."

W. Hanson, Esq.,
&c. &c. &c.

JOHN BINGER.

LETTER sent to the North Midland Railway Company relative to the Conveyance of Carriages
on the Line.

SIR, Board of Trade, Whitehall, 3rd November, 1841.

IN reply to your letter of the 30th October, I am directed, &c. to inform you that the explanation relative to the conveyance of carriages upon the North Midland Railway appears quite satisfactory.

The regulation as to horses is, however, open to objection, if the Company make a general rule of refusing to carry horses, unless the owner will sign a special agreement, purporting to exempt the Company from all liability for loss, however occasioned. Their Lordships do not object to such fair and reasonable arrangements with regard to horses, as may be necessary in order at the same time to promote the public convenience, and to give the Company either protection against, or remuneration for, any extraordinary risk arising from the nature or value of the object, but it appears to them that the limitation in question goes further than is warranted by these reasons and by the law. As the regulation, however, does not fall within the scope of their Lordships' jurisdiction, under the Act for Regulating Railways, they confine themselves to pointing out its objectionable nature, and recommending the Directors to revise it.

The Secretary of the
North Midland Railway Company.

I am, &c.
S. LAING.

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North Midland.

The regulation now in force upon the North Midland Railway is to require the signature of the owner to the following conditions :—

“ The conditions subject to which the London and Birmingham, Birmingham and Derby Junction, North Midland, York and North Midland, and Great North of England Railway Companies undertake the conveyance of horses, together with the prices for such conveyance, are as under, viz. :—

“ That they will in no case be liable for the loss or injury to any horse, of whatever value, where the same arises wholly or partially from vice, alarm, violence, or restiveness in the horse itself.

“ These Companies will not be liable in any case for loss or damage to any horse above the value of 40*l.*, unless there has been given to them a declaration of its value, signed by the owner or his agent at the time of booking; and by such declaration the owner shall be bound; the Companies not being in any event liable to any greater amount than the value so declared.

“ If the value so declared do not exceed 40*l.*, then the prices for carriage will be as under, viz. :—

	£.	s.	d.
“ For the entire distance between London and			
Darlington	One horse	6	2 0
	Two, in one box and same pro-		
	perty	10	5 0
	Three ditto, ditto	13	6 0

“ If the declared value exceed 40*l.*, then the prices for carriage will be after the rate of 2½ per cent., or 6*d.* per £. value upon the declared value above 40*l.* whatever it be, and for whatever distance the horse is to be carried, in addition to the above-mentioned fixed rate of carriage for horses of, and under 40*l.* in value.”

IX.—ENFORCEMENT OF PROVISIONS OF RAILWAY ACTS.

GREAT NORTH OF ENGLAND RAILWAY.

SIR,

Darlington, July 14th, 1841.

I have the honour to submit the accompanying case for the consideration of their Lordships of the Board of Trade.

Lt.-Col. Sir Frederic Smith, R. E.
&c. &c. &c.

I have, &c.
D. O'BRIEN.

Appendix.

IX.
Enforcement of
Provisions of
Railway Acts.

No. 1.
Great North of
England.

GREAT North of England Railway Company, and Messrs. Gill and Brown.

The Croft Branch of the Stockton and Darlington Railway Company was purchased by the Great North of England Railway Company, and now forms a portion of the latter's main line.

Messrs. Gill and Brown purchased their properties subsequent to the passing of the Act for making the Croft Branch of the Stockton and Darlington Railway.

Messrs. Gill and Brown, under the powers of a certain clause in the Stockton and Darlington Railway Act, were at the expense of laying down short curved branches (as shown in the tracing lettered *A.*), to communicate between their premises and the Croft Branch, for the purposes of their trades, one being a corn factor, and the other a brickmaker, respectively, and they used those branches until certain changes, consequent on altering the levels to convert that portion of the Croft Branch into the Great North of England main line, made it necessary that they should be discontinued.

The tracing lettered *B.*, shows the present state of the ground.

Messrs. Gill and Brown now require such communications to be restored. The engineer of the Great North of England Railway strongly objects to any such communications being made.

It is submitted, on the part of the Great North of England Railway Company, that, as will be seen by the tracings, from the very close vicinity of the town of Darlington, the crossing of the railway near the junction of several highways, the constant passage of locomotive engines, coal-waggons, and merchandize trucks, between the coach station on one side of Messrs. Gill and Brown's premises, and the engine shed, workshops, and merchandize station on the other; the want of space, and the necessary difficulty of keeping the main line clear of the waggons and trucks used by Messrs Gill and Brown in their respective trades, make the construction of such communications most objectionable; and considering the safety of the public would be much endangered thereby, that this Company are desirous of having the judgment of the Lords of the Council for Trade, or of their officer, as to whether the cases of Messrs. Gill and Brown do not come fairly within the meaning of Lord Seymour's Act; and if so, what their Lordships might be pleased to recommend the Great North of England Railway Company to do under the circumstances.

Per pro. of the
Great North of England Railway Company,
F. DAIRDSON.

REPORT to the Lords of the Committee of Privy Council of Trade.

MY LORDS,

Board of Trade, 12th August 1841.

I HAVE the honour to submit the following report to your lordships, upon the case of the Great North of England Railway Company and Messrs Gill and Brown.

Having proceeded to Darlington, and there inspected the localities described in the plans which accompanied the case, in company with Mr. O'Brien, the secretary, Mr. Whitwell, the resident engineer of the Company, and Messrs. Gill and Brown, I ascertained the following facts:—

The portion of the Great North of England Railway to which the case refers, was originally constructed by the Stockton and Darlington Company, under the powers of an Act 4 Geo. IV., c. 33, for making a branch line from the Stockton and Darlington Railway to Croft. By the 26th section of this Act, the provisions of the original Act of Incorporation of the Stockton and Darlington Railway Company, the 1 and 2 Geo. IV., c. 44, are extended to this branch.

By the 86th section of the latter Act, it is enacted, "That nothing therein contained shall extend to prevent the owners and occupiers of the respective lands or grounds lying within five miles of the said railway, from laying down, either upon their own lands or upon the lands of other persons, with the consent of such other persons, any collateral branch or branches from their respective lands or grounds, to communicate with the said railway, nor from making at their own expense such openings in the ledges or flanches of the said railway, as may be necessary and convenient for effecting such communication; and that the said Company shall not receive any tonnage for the passing of any goods or other things along such branch or branches."

Under the powers of this clause, Messrs. Gill and Brown, being proprietors of certain

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IX.
Enforcement of
Provisions of
Railway Acts.No. 1.
Great North of
England.6 and 7 Will. IV.
c. 105, s. 6.6 and 7 Will.
c. 105, 82.

premises immediately adjacent to the railway, laid down a short branch communicating with it, which they used without interruption as long as the Croft Branch remained in the hands of the Stockton and Darlington Railway Company.

By a subsequent Act, the 6 and 7 Will. IV., c. 105, the Great North of England Railway Company were empowered to purchase the Croft Branch from the Stockton and Darlington Railway Company, and it was granted that in the event of such purchase, the Croft Branch should be held by the former Company "with, and subject to all the powers, provisions, and regulations herein contained, with respect to mines, tolls, rates, penalties, and all other matters and things whatsoever; so far as the same may be applicable in the same manner, to all intents and purposes, as if the said Croft Branch were part of the railway hereby authorized to be made, and in lieu of the powers, provisions, and regulations relating to, or concerning the said Croft Branch contained in any other Act or Acts of Parliament already passed."

By a subsequent clause of the same Act, it is provided—"That nothing in this Act contained shall extend to permit any corporation or person whomsoever, being the owners or occupiers of any land adjoining to or near the railway, or any other person, from laying down either upon, through, under or over the lands of such corporation, or person, or upon, through, under or over the lands of any other persons, with the consent of such persons, any collateral branches from such land, to communicate with the said railway, and the said Company shall be bound to make up at the expense of such corporation or person, openings in the ledges or flanches of the said railway, for effecting such communication in such places as may be most convenient for that purpose, and as may the least interfere with the passage of the said railway.

"Provided always, that the said Company shall not be bound to make any such openings in the ledges or flanches of the said railway for the purpose of effecting such communication in any places where they shall have erected or set up any building, steam-engine, works, machinery, or yard, or in any places which they shall have appropriated or set apart for any special purpose with which such communication would interfere, nor upon any inclined plane, nor in any tunnel; and in case any disagreement or difference shall arise between any such owners or occupiers or other persons and the said Company, as to the proper places for making any such openings in the ledges or flanches of the said railway for the purpose of such communication, then the same shall be left to the decision of any two justices of the peace acting within their jurisdiction, whose determination, after the examination of such competent witnesses as may be produced before them shall be binding."

The Great North of England Railway Company have since purchased the Croft Branch, and converted it into a portion of their main line, as shown in the plan *B*, which accompanied their case. In the course of the alteration consequent on this change, the branch which had been laid down by Messrs. Gill and Brown was taken up and replaced by the present branch as delineated in plan *B*, which renders the communication less dangerous, inasmuch as the points no longer face the direction of the traffic.

The engineer of the Company, however, strongly objects to the existence of a communication with the main line of the railway under any circumstances, in such a position; and it appears clear that it must be a source of additional danger to the public, especially when the contemplated arrangements are completed, by which the passenger station will be removed to a point higher up the line, and the trains will pass the point of Messrs. Gill and Brown's communication at full speed.

At the same time, however, I cannot consider the danger to the public so immediate as to bring the case, as is suggested on the part of the Company, within the spirit of Lord Seymour's Act. The 15th and 16th section, of that Act give a summary power of removing obstructions calculated to endanger the safety of persons conveyed upon the railway, and they would undoubtedly suffice to enable the Company, in any individual instance where some specific danger clearly existed, to remove any obstruction caused by Messrs. Gill and Brown, and to prosecute them or their servants if such dangerous obstruction had been wilfully and improperly occasioned.

6 and 7 Will. IV.
c. 105.

But it cannot be held that these summary powers were intended by the legislature to take away the right of communication which in almost every Railway Act has been carefully guaranteed to the owners of adjoining lands and to the public.

It seems equally clear that there is nothing in the statute above referred to by which the Croft Branch is subjected to the same provisions as the Great North of England Railway, which can affect the right of Messrs. Gill and Brown to a communication made and enjoyed by them before the Great North of England Railway Company was in existence.

Sect. 82.

The section quoted might perhaps be sufficient to negative a claim to open a new communication in a place which may be said to be included in the station, and therefore "appropriated for a specific purpose with which such communication would interfere," but it cannot be held to have deprived parties of an existing right.

I consider it clear, therefore, first—that the title of Messrs. Gill and Brown to their communication is undoubted.

Second, that it is desirable for the public safety that the present communication should not be allowed to remain.

By the 18th and 19th sections of Lord Seymour's Act, the provisions of all Railway Acts that empower two justices of the peace to decide disputes respecting the proper places for openings in the ledges or flanches of railways are repealed, and it is enacted—"That in case any disagreement or difference shall arise between any owner or occupier or other person and any railway company as to the proper places for any such openings in the ledges or flanches of any railway for the purpose of communication, then the same shall be left to the decision of the Lords of the said Committee, who are hereby empowered to hear and determine the same in such way as they shall think fit, and their determination shall be binding on all parties."

Under this clause your Lordships have full power to decide all disputes respecting the "*proper place* for effecting a communication with a railway," but it does not entirely meet a case like the present, in which it is necessary, for the public safety, to prescribe certain arrangements, limiting the legal right of parties to a free communication with the main branch of the railway, and involving compensation. Under these circumstances I considered it the best course to suggest an amicable arrangement upon the following basis.

The Company's engineer to propose such an arrangement respecting the communication as he considered sufficient for the public safety. This arrangement to be submitted to Sir Frederic Smith, and if approved of by him to be adopted. Compensation to be given by the Company to Messrs. Gill and Brown, for any detriment which might be occasioned to them by the adoption of this arrangement; the question of compensation to be settled by private agreement, or failing this, by arbitration.

I am happy to say, that I found all parties ready to comply with this suggestion; and I have every reason to believe that the matter will shortly be set at rest, and the danger to the public obviated, without the necessity for any further interference on your Lordships' part.

I cannot conclude my Report without calling your Lordships' attention to the extremely defective state of the law as it stands at present, with regard to the question raised by the above case, *viz.*, that of the right of proprietors of lands adjoining to railways to lay down branches and effect communications.

The origin of this right is very clearly stated in the Third Report of the Select Committee on Railways, Session 1840.

In the infancy of the railway system, a total misapprehension as to its nature prevailed on the part of the legislature and of the public. The general impression was, that the Company who constructed the railway were to be, like the generality of Canal Companies, merely toll proprietors, charging a certain toll to the public using their way. "The legislature," as is stated by the Committee, "in its anxiety to prevent a monopoly which was not sought even by the promoters of the Bills, enacted, that any person might place his own engines, carriages, and waggons on a railway, subject to the payment of certain tolls, but under such regulations as might be made by the Company."

With the same view it was provided, "that the owners and occupiers of adjoining lands should have free access to the Railway, and might make branch lines to join the Company's line; in which case the Company should be bound to make an opening for the branch line, charging the cost of this work to the parties requiring the accommodation. Rights were also given to lords of manors, and other owners of contiguous land, to erect wharfs; and they were further empowered to use the railway as far as their own land extended, without being liable to any payment of toll (a privilege obviously useless, except under the supposition that such landowners need not apply to the Company for locomotive power), while the beneficial use which they might make of railways in the cheap conveyance of their produce to a distant market, and in bringing manure and materials for their lands and buildings, was frequently stated to be the chief inducement for allowing their property to be intersected and their lands purchased."

It is scarcely necessary to observe, that this view of the working of the railway system has turned out to be completely erroneous, and that experience has shown, that it is essential for conducting the traffic with any regard for the public safety, that Railway Companies should, to use the language of the same Committee, "be confirmed in the possession of an exclusive authority and management over their own line, and be allowed an entire monopoly in providing and regulating the locomotive power."

This monopoly has never been expressly conferred; and the legal right remains to any party who can obtain the consent of an owner of land adjoining a railway, of laying down a communication with it, entering upon it, and employing his own carriages and locomotive power. It is true, that this right has remained almost a dead letter, owing to the danger and inconvenience of exerting it, and the power of Railway Companies of throwing obstacles in the way of other parties using their line. Still there are cases, especially among the northern railways, where a coal traffic is combined with that of goods and passengers, where it is exercised; and there is no security against its being claimed at any time, and under circumstances which would endanger the public safety.

The provisions of Lord Seymour's Act above referred to, which empower the Board of Trade to determine disputes as to the "*proper places* for effecting openings in the ledges or flanches of railways for the purpose of making communications with adjoining lands," hardly appear a sufficient security against this danger. There can be no doubt that every interruption of the main line is more or less a source of additional danger, and that it is highly inexpedient to multiply them more than is absolutely necessary; and if such is the case, even where the branch communications are under the entire control and management of the Company, it is much more so when they belong to other parties. The safety of trains is then made to depend upon the conduct of servants not employed by the Company, and not responsible to them. As a general rule, therefore, it may be safely laid down, that no private communication should be suffered to exist with the main line of a Railway upon which passenger trains pass at the usual speed; and that where such communications are required they should be made into a siding, and be under the control of the Company. The Board of Trade, in order to afford perfect protection to the public, would require a power, not merely of deciding in disputed cases upon the "*proper places*" for making openings in the ledges or flanches of a railway, but of enforcing such arrangements generally respecting branch communications as appeared necessary to insure safety.

I have, &c.
S. LAING.

2 P

Appendix.

IX.
Enforcement of
Provisions of
Railway Acts.

No. 1.
Great North of
England.

GREAT NORTH OF ENGLAND RAILWAY.

Appendix.

IX.
Enforcement of
Provisions of
Railway Acts.No. 1.
Great North of
England.

Sir,

Engineer's Office, 26th August, 1841.

I TRANSMIT you a tracing of the alteration I propose to make in Brown and Gill's siding. The blue lines show the present siding; the red lines the altered one, which you will observe, instead of being brought out of the main line, is out of a siding already laid in, and used for our coach station. This arrangement will do away with any danger, as the waggons will stand in the siding entirely unconnected with the main line. I may add, that the parties themselves are quite satisfied with the arrangement.

S. Laing, Esq.

I am, &c.

HENRY WHITWELL.

The Inspector-General having reported, after an inspection of the place, that the arrangement referred to in Mr. Whitwell's letter would obviate the danger to the public, and having signified the consent of Messrs. Gill and Brown, as conveyed to him personally, their Lordships approved of the arrangement.

8th September.

S. LAING.

No. 2.

No. 2.
Clarence, Stockton,
and Hartlepool.

CLARENCE, STOCKTON, AND HARTLEPOOL RAILWAY.

MY LORDS,

Norton, near Stockton-on-Tees, 5th August, 1841.

YOUR Lordships having, by the statute 3 and 4 Vic., c. 97, been appointed to the due supervision of railways, I beg to bring the following statement before your notice:—

The Clarence Railway, in the county of Durham, obtained its first Act (9 Geo. IV., c. 61) in 1828, which was amended by 10 Geo. IV., c. 106; they afterwards obtained other Acts, 2 Will. IV., c. 25; 3 Will. IV., c. 4; and 3 Will. IV., c. 95. Under the first Act the main line was made, and by the second a branch from it to Stockton.

This branch leaves the main line in the parish of Norton, and within 150 yards of its so doing crosses the highway (then a turnpike-road) from Norton to Durham. Their rails are here by their Act 8 feet 3 inches below the surface of the ground, and the road was sloped on each side down to that depth; it was then considered such a dangerous place, owing to the high banks on either side preventing the persons using the road from seeing engines, &c., on the railway, that the Company afterwards purchased the right of sloping down the sides of the ground on each side of the railway to open out the view, though they afterwards built a row of cottages which somewhat interfered with this intention. Under statute 2 and 3 Vic., c. 45, gates were put up. The adjoining land here belongs to the Messrs. Hogg, who built a public-house, and caused a short line for coals and lime to be laid down for the use of the inhabitants of Norton and the neighbourhood, and which is much used.

About a year ago a Company has formed a line (the Stockton and Hartlepool Union Railway) to Hartlepool, which joins the main line of the Clarence Railway, about two miles lower down than the branch to Stockton, and for which line there is no Act of Parliament; but it is done by leave of the proprietors of land through which it passes. Coach trains run several times a day between Hartlepool and Stockton, and in order to avoid the necessity of stopping at the junction of the main line with the Stockton branch, the following plan was resorted to:—

The Clarence Company purchased a piece of land of the Messrs. Hogg, and proceeded to lay down a single line of rails; for this purpose they had to lower the surface of the public road, and cross it with another line of rails at some distance from the original railway, and as this was extremely dangerous to the public great objection was made. The solicitor of the Company called a parish meeting for the 2nd of March last, to ascertain the sense of the parishioners on the subject, when it was determined, by a large majority, that the danger was so great they should not be allowed to cross in the manner proposed. I should have stated, that early in February they had laid their rails up to the public road on either side; the surveyor of the highways frequently warned the men at work not to touch the road; however, they commenced at midnight, on February 8th, with a large force, and although on account of the frost they had to blow up the highway with gunpowder, they completed the job before morning; which, as soon as the surveyor discovered, he removed the rails, and immediately restored the road.

The Company have recently taken the opinion of Sir F. Pollock, who, considering this as an "improvement," and not a new branch, says, that as the Company had once the right of making it (which I deny), they still have so; and in consequence, they have within these few days again laid their rails across the public road.

The present dangerous state of things is—

- 1st. The railway is so concealed from the road, that it is impossible to see the approach of engines, &c.
- 2nd. The gates are 28 yards from each other, which must of necessity render the proper opening and shutting of them by one old man a matter of difficulty.
- 3rd. The original railway and the new branch are not on the same level, and there is a considerable rise in the road between the old branch and the new.
- 4th. The road from the public-house, and which is much used, comes in between the gates, so that although they may be shut, yet a cart or carriage can nevertheless come on to the road between the gates.
- 5th. The public foot-path is entirely blocked up, and no substitute provided; and
- 6th. The curve on the new branch is a very dangerous one.

All these dangers and difficulties might be at once avoided by carrying the road over the railway by a bridge, which could be very easily done; but the Company wish to avoid the expense.

The surveyor of the highways complains much of the very dangerous state of the road; but as the Company have had this opinion in their favour (though I do not think it correct, as the case is not rightly stated), I have thought it right to apprise you of the circumstances, in order that you may have the spot inspected before you sanction it, and protect the rights of the public, which are thus unwarrantably interfered with; for the new line of rails is in every sense a new branch, and a new portion of a railway, and not a mere siding belonging to the original line.

I am sorry to have troubled you at such length, but I am anxious to state as much as I could within the limits of a letter, and I trust that as the matter is urgent, it may meet with your early attention.

To the Lords of the Committee,
&c. &c. &c.

I have, &c.
W. SCURFIELD GREY.

Appendix.
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Enforcement of
Provisions of
Railway Acts.
—
No. 2.
Clarence, Stockton,
and Hartlepool.

MY LORDS,

Stockton-on-Tees, 28th August, 1841.

IN conformity with your instructions, I have this day inquired into the complaint preferred against the Clarence Railway Company by Mr. Scurfield Grey, in his Memorial dated the 5th instant.

I have had before me, and I have attentively considered, the allegations in that Memorial, as well as the observations made upon them by Mr. Ward Jackson, on behalf of the Clarence Railway Company, in his statement of the 14th inst.; and I have examined, in the presence of both the aforesaid gentlemen, that portion of the line to which they have alluded. We were accompanied by the father of the memorialist and Mr. Fowler, who are magistrates of the county of Durham, and by Mr. Fowler, the resident engineer of the Stockton and Hartlepool Railway.

This department received from Mr. Jackson, with his observations, a drawing and a verbal statement of the mode of working the portion of railway under consideration, which is called the Norton Junction; and I beg to call your attention to these documents, which give a faithful representation of the circumstance and operations they are intended to describe.

At the point in question the Clarence Railway, in its easterly course, forks off into two branches: the one towards Stockton, and the other, which was the original line, towards Port Clarence.

Had the trains been confined to the traffic to those two places from the western termini of the Clarence Railway and back, little difficulty would have arisen in the working of the line; because the engines and carriages would have proceeded to their destination without requiring any precautions beyond those which are usual at all junctions. But the arrangements are rendered more complicated by what may be termed the cross-traffic between Stockton and Hartlepool.

Mr. Jackson's plan and verbal statement sufficiently explains how this is done at present, and a more objectionable and dangerous practice it would be difficult to imagine. The process is repeated no less than 12 times a day, and considering the extent of the coal traffic on these lines, it is wonderful that some terrible collision has not taken place; and I think the preservation of the passengers reflects credit on the conduct and steadiness of the engine-drivers; for I find that there are no fewer daily than 24 trains down the line with coals, and the same number of trains of empty coal-waggons returning, besides a large number of trains of stones, &c., drawn by horses.

The necessity of some remedy, however, became apparent to the Directors of the Clarence Railway, and they in consequence determined on adopting what I believe to be the best course, namely, the formation of a curved line from the Stockton branch to join the main line; and they accordingly commenced the curved line shown in the drawing, which it will be necessary for your Lordships to refer in order to have a clear view of the case.

Mr. Grey, in his memorial, objects to the proposed arrangement for the following reasons:—

1st. Because as the railway is here crossed on a level by a parish road, and as the curve is so formed in a cutting as to conceal the approach of the engines, travellers on the latter would be exposed to considerable risk, the more especially as the gates across the ends of the parish road will be 28 yards asunder if the curve be established as at present laid out.

2nd. Because the branch to Stockton, and the curve to Hartlepool, both of which are crossed by the parish road between the gates, are on different levels.

3rd. Because there is a public-house standing on the triangular plot of ground bounded by the two branches and the curve, which is tenanted by a person not a servant of the Company, and therefore carts, &c. leaving the premises without the knowledge of the gate-keeper may endanger the lives of travellers by the railway, and other parties, by coming into collision with the trains.

4th. Because the public have been deprived of a footpath by the Railway Company in consequence of the alterations they are now making; and lastly, because the curve is of so short a radius as, in his opinion, to be dangerous.

The remedy proposed by Mr. Grey, is a bridge to extend both over the present branch and the intended curve, supposing the Company have the right to form the curve, of which he has expressed a doubt, notwithstanding that Sir Frederic Pollock has given an opinion that they have this right.

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Mr. Jackson contends for the right of the Clarence Railway Company to make the curve, and alleges that the traffic across the railway by persons travelling along the parish road, is not sufficient in amount to be likely to create the danger apprehended by Mr. Grey; but has at the same time expressed, on the part of the Company, a desire to meet the matter in a fair spirit, and to be guided by your Lordships' decision, as far as may be found consistent with the duty which the Directors owe to their constituents.

I should explain to your Lordships that the parties making the curve are not the Clarence Railway Company, but the Stockton and Hartlepool Company, whose trains not only run over the two miles of rails between the Stockton Terminus and the Norton Junction, but also over two miles eastward of the said Junction, to a point where the Hartlepool Railway unites with the Clarence Railway.

The total distance by railway from Stockton to Hartlepool is 12 miles; four of that distance being on the Clarence Railway and its Stockton Branch, as already stated, and eight on the Hartlepool Line. The Clarence Railway Company not having experienced any very great inconvenience in working the junction in the way described by Mr. Jackson, were not taking measures for altering the system; but on the traffic of the Hartlepool trains being added, and the coal traffic increasing, the necessity of an improved system of working the Norton Junction became so apparent, that the Hartlepool Company were induced, for the safety of the public, to undertake, at their own immediate expense, the formation of the curved line now in dispute, and for this purpose I understand they take up the powers which it has been assumed that the Act or Acts of the Clarence Company give the latter in this respect.

This part of the transaction involves points of law which your Lordships will most probably refer to Mr. Laing, the legal officer of the Railway Department; and it will be sufficient that I call his attention to the fact, that it is the Hartlepool, and *not* the Clarence Company, who are forming the curve.

Mr. Jackson, with a view to establish the right of the Clarence Railway to form the proposed curve, puts forward the opinion of Sir Frederic Pollock, which is in their favour. To so high a legal authority I should unhesitatingly defer, had the case been put according to what I consider to be the actual state of things; but this, I think, has not been done. I however beg distinctly to say, that I acquit those who submitted the case of any wilful mis-statement. The case has been put as if the widening of the Clarence Railway had been the matter in dispute, and as if the only question had been whether or not the Company had lost their powers by lapse of time; whereas, in my opinion, it is not the *widening* of an existing portion of a line, but the *substitution* of a new for an old portion, and for a traffic which I apprehend was not even contemplated in the Acts of the Clarence Company.

However this may be, I regard the formation of the curved line to be so important in reference to the safety of the passengers, that every facility that may be within the power of Her Majesty's Government should be afforded to the Company or Companies in carrying their project into effect, provided they are willing to adopt such precautions as I shall suggest for the public safety.

The point which is more especially my duty to determine, is how this can be effected so as to give the greatest degree of security to the railway passengers, without endangering the safety of travellers along the road which crosses the curve.

There can be no question that where there is much traffic along a railway which is crossed on a level by a road, also having great traffic, the danger to the traveller is considerable; and that this danger is much increased when the railway so crossed is formed in a cutting adjoining, or in a curve.

Under such circumstances it would generally be the wiser course to cross the railway with a bridge, and, in most cases, the expense alone would be the objection to such an arrangement.

For the crossing of the original branch line at *F*, I would have recommended that course, supposing the curve had not been also necessary, and I would do so for the level crossing at *B*. Indeed I would suggest to your Lordships to press this latter point upon the Clarence Railway Company, as a means of increasing the safety of the public; and as they would thereby save the wages of the gate-keeper, the comparative difference of expense would not be very considerable.

In the case, however, of the crossing of the original line, and the proposed curve, where Mr. Grey has suggested that a bridge should be formed, I am disposed to think that, although undoubtedly the safer arrangement for the travellers on the parish road, it would not be so safe for the railway passenger as the arrangement I am about to advise, because the piers of the bridge would tend to obscure one train from the view of the driver of another, from which circumstance collisions would in all probability take place at or near the junction.

Before I proceed further I should acquaint your Lordships that on the Clarence and on the Stockton and Hartlepool Railways, it is the practice for the trains to run on the right hand lines of rails, thus reversing the order pursued on almost all the other British railways.

I am not aware that there is any local necessity for this departure from the usual system, and it would have been far better had it not been commenced; but as the switches, points, and crossings are now laid down throughout both lines, to suit this arrangement, I do not think it necessary to advise your Lordships to call upon the Companies concerned to make a change.

It would have been desirable that the cottages shown on the plan had not been erected on the triangular spot bounded by the curve and by the original main and branch lines, which meet at the junction, as they obscure the view of one train from another; indeed, it would have been preferable had the whole triangular space been lowered to the level of the rails, and this, I trust, will eventually be done. Your Lordships will perceive that a part of that space is occupied by the public-house adverted to by Mr. Grey. I can scarcely conceive

anything more objectionable, or more likely to lead to dangerous consequences, than a public-house in such a situation; for, if much frequented, the danger to the railway traveller may be fearfully increased; and if, which is much to be dreaded, the engine-drivers should stop there for liquor, enormous risk will be incurred by all persons dependent for safety on their sobriety and steadiness.

The house being licensed, and let with the license, it may be difficult, without considerable expense, to get rid of this nuisance; but I think this is a case which should be strongly pressed on the Stockton and Hartlepool Railway Company, to which this house belongs.

The curve has a radius of only 310 feet, which, although not impracticable, is very objectionable, and must be worked at a very low rate of speed. The radius might be somewhat increased by a slight alteration of the rails of the Clarence Railway and the Stockton Branch; and by this means the amount of one of the objections of Mr. Grey might be lessened, as the space between the two gates may be thereby diminished; but these alterations will be unnecessary for the prevention of collisions, if the Companies will adopt the following propositions for working their trains:—

A gatesman should be placed at *F* to have the charge of the two gates at the level crossing at that point and of the switches at *A* and *C*.

The person selected for this duty must be active and intelligent,

At *B* a gatesman is at present stationed, who must continue there; but I question whether the individual whom I saw in that situation is sufficiently active to fulfil its duties.

I would suggest, that all trains coming from the west and proceeding to Port Clarence or Hartlepool, should proceed on their course without being detained at *B* or at *C*; but that those coming from the west and destined for Stockton should pull up between *B* and *F*, and should not proceed until the gatesman at *F* shows the signal of safety, which he will only do when the passage across the lines at that point are perfectly clear.

Trains from Stockton to Hartlepool are not to pass the crossing at *F* unless the signal of safety is exhibited to them by the gatesman at that point; and when so exhibited they should proceed beyond *F* and pull up just beyond *G*, which is the culminating point of the planes ascending from *A* and *C* respectively towards *G*.

Trains from Port Clarence and Hartlepool proceeding towards Stockton should not cross at *C* unless they see the line is clear beyond *B*, or that the signal of safety is exhibited there. After passing *C* they will pull up beyond *G*. The object of these two detentions is, to prevent the trains in either case from coming into collision with a train from the westward destined either for Stockton or for Hartlepool and Port Clarence.

With these precautions carefully carried out, I conceive a collision of trains to be impossible and the safety of the traveller by the parish road secured.

Under all the circumstances I consider it peculiarly fortunate that this subject has been brought under your Lordships' consideration; and it was very gratifying to me to be met in such a good spirit by Mr. Jackson, and also by Mr. Rayson, who is a Director both of the Clarence and of the Stockton and Hartlepool Railway; and who met me on the part of both Companies to adjust the difference with Mr. Grey.

I return Mr. Grey's memorial, and the other papers with which I was supplied in my investigation of the subject referred to in this Report.

I enclose a sketch for the purpose of explaining the manner in which I propose that the Norton Junction should be worked.

I have, &c.

FREDERIC SMITH, Lt.-Col. R. E.

Inspector General of Railways.

P.S.—While I was on the spot Mr. Jackson undertook that a proper footpath should be made, as required by Mr. Grey.

F. SMITH.

To the Lords of the Committee,
&c. &c. &c.

MY LORDS,

Stockton, 21st September, 1841.

As solicitor of the Clarence and of the Stockton and Hartlepool Railway Companies, I beg leave to acknowledge the receipt of a copy of Sir Frederic Smith's Report of the 28th of August last, in reference to the Norton curve on the Clarence Railway, and to assure your Lordships that the recommendations given by him as to the formation and working of the curve will be immediately carried into effect.

I have, &c.

R. WARD JACKSON.

The Lords of the Committee,
&c. &c. &c.

MY LORDS,

Norton, Stockton-on-Tees, 20th Dec. 1841.

On the 5th of August last, I wrote to your Lordships complaining of the very dangerous and unlawful mode by which the Clarence Railway Company was attempting to cross one of the highways in this parish.

In consequence of my representation, Sir Frederic Smith was directed to look at the place; Sir Frederic attended on the 28th of August, and in the presence of Mr. Fowler, the

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Chairman of the Stockton Bench of Magistrates, my father, also a magistrate, the solicitor (Mr. Jackson) and engineer of the Clarence Railway Company, the surveyor of the parish highways and myself, inspected the spot. Sir Frederic laid down the position, that as the railway was of more service to the public than the highway, the convenience of the latter was to be sacrificed to the former, which we assented to with this proviso, *viz.*, that the highway was, as nearly as circumstances would permit, to be rendered as safe and convenient as it was prior to the formation of the railway. Sir F. Smith also pointed out the extreme danger of the engines and coaches on the railways using the points and crossings in the way they were then doing.

Having made a complaint in the proper quarter, the parishioners were satisfied that they had done all they could in the matter, and that the responsibility in case of accidents at all events was taken from them. I am however sorry to say, that although some months have now elapsed, no Report of Sir F. Smith has reached us, and all things remain in exactly the same state in which they were in August last. The public highway uneven and damaged—the gates as far apart as ever—the public-house and depôts still in use, and the roads from them coming upon the highway between the gates. The public footpath is still quite closed, and the crossings and points on the railway itself are used in the self-same dangerous manner.

May I call the serious attention of your Lordships to these circumstances, and hope that under the powers of Parliament with which your Lordships are armed, some speedy interference for the protection of the public, as well on the highway as on the railway, may be afforded.

I beg to refer your Lordships to my letters dated 5th August, 1841, and 30th August, 1841.

I remain, &c.

To the Lords of the Committee,
&c. &c. &c.

W. SCURFIELD GREY.

SIR,

Board of Trade, 23rd December, 1841.

IN reply to your letter of the 20th December, stating that nothing has been done to carry into effect the recommendations of Sir F. Smith, relative to the Norton Junction of the Clarence Railway, I am directed to inform you, that immediately after Sir F. Smith's inspection in August last, a copy of his Report was sent to the Clarence and Stockton, and Hartlepool Railway Companies, with a letter from their Lordships, urging the adoption of the precautions suggested; and on the 21st of September, Mr. Jackson, the solicitor of the two Companies, wrote in reply to their Lordships, to assure them "that the recommendations given by Sir F. Smith as to the formation and working of the curves, should be immediately carried into effect." I am further directed to inform you, that in consequence of the statement contained in your letter, immediate steps will be taken to ascertain why this assurance on the part of the Railway Companies has not been carried into effect.

I am, &c.

W. S. Grey, Esq.,
&c. &c.

S. LAING.

SIR,

Board of Trade, 23rd December, 1841.

WITH reference to the correspondence which took place in August and September last, relative to the Norton Junction of the Clarence Railway, I am directed to inform you, that the Lords, &c., have received a letter from W. S. Grey, Esq., the gentleman upon whose former representation the inspection took place, dated Norton, 20th December, 1841, in which he states "that all things remain in exactly the same state in which they were in August last, the public highway uneven and damaged, the gates as far apart as ever, the public-house and depôts still in use, and the road from these coming upon the highway between the gates, the public footpath still quite closed, and the crossings and points on the railway itself are in the self-same dangerous manner."

I am further directed to remind you that Sir F. Smith, in his Report, a copy of which was transmitted to the Clarence and Stockton, and Hartlepool Railways, states that although he considers the curve necessary for working the junction in safety, and although he cannot recommend the erection of a bridge as proposed by Mr. Grey, yet he thinks it necessary to recommend various precautionary measures, with a view to obviate as far as possible the danger both upon the railway and highway.

These precautions are—

1st. That a public-house belonging to the Stockton and Hartlepool Railway Company, and situated in the triangular space between the curve, the Stockton and Hartlepool, and the Clarence Railways should be discontinued.

2nd. That steps should be taken for removing this public-house altogether, and also some cottages built upon the same space, and for lowering the whole space to a level with the rails.

3rd. That an active and intelligent gatekeeper should be stationed at the crossings.

4th. That certain arrangements specified in the Report should be made in order to prevent the possibility of accidents from collision in working the junction.

5th. That a proper footpath should be made at the crossings.

In reply to a letter from their Lordships inclosing a copy of this Report, and stating that although the legality of the proceeding of the Company in making the curve in question across the highway, might be doubtful, their Lordships would not under the circumstances

think it necessary to interfere, provided they received an assurance that the precautions suggested by Sir F. Smith should be carried into effect, their Lordships received a letter, dated the 21st September, in which you state that "as solicitor of the Clarence, and of the Stockton and Hartlepool Railway Companies, you beg to assure their Lordships that the recommendations given by Sir F. Smith in his Report as to the formation and working of the curve, will be immediately carried into effect."

As it appears from the statement in Mr. Grey's letter that nothing has yet been done, I am directed, &c., to inquire what is the cause of the delay, and what steps have been taken to give effect to the assurance.

R. W. Jackson, Esq.,
&c. &c.

I am, &c.
S. LAING.

SIR,

Stockton, 30th December, 1841.

I BEG to acknowledge the receipt of your letter of 28th instant, requesting to be informed why the Norton curve has not yet been completed. In reply I have to state, that the cause of the delay has arisen from a dispute with the contractor, who was engaged not only with that work, but also the Stockton and Hartlepool Railway. This dispute, however, I am glad to say, is agreed to be referred to the decision of engineers, and that, consequently, preparations are at this moment making for the immediate completion of the curve, and which I hope will be accomplished in the course of two or three weeks' time. Had Mr. Grey chosen to make the slightest inquiry from me, or any other authorized person on the spot, he would have at once been convinced of these facts.

S. Laing, Esq.

I am, &c.
R. W. JACKSON.

SIR,

Board of Trade, 3rd January, 1842.

I AM directed, &c., to acknowledge the receipt of your letter of the 30th December, stating that the delay in completing the promised arrangements relative to the Norton curve has been occasioned by a dispute with the contractor, but that you expect the whole to be completed in a fortnight or three weeks' time. Their Lordships request, that at the expiration of that period, information may be given them as to the progress of the works, with reference to the recommendations contained in Sir F. Smith's Report.

R. W. Jackson, Esq.

I am, &c.
S. LAING.

No. 3.

GLASGOW, PAISLEY, AND GREENOCK RAILWAY.

No. 3.
Glasgow, Paisley,
and Greenock.

SIR,

Glasgow, 3rd April, 1841.

I BEG leave to direct your attention to that part of the enclosed advertisement, in which the Glasgow, Paisley, and Greenock Railroad Company offer to carry passengers beyond Greenock. I consider *this is more than their Act of Parliament empowers them to do, and an evasion of the carrying clauses, by which all parties are put upon an equal footing as to rates*; but instead of doing so, they charge as much between Glasgow and Greenock, as they do from Glasgow (per railroad and steam-boat) to Helensburgh $4\frac{1}{2}$ miles, Roseneath 6 miles, and Gairlochhead 11 miles beyond Greenock; for 2d. extra they carry you to Dunoon 8 miles, and for 6d. extra to Rothsay 18 miles past Greenock. The regular fares by the steamers was from Greenock to Helensburgh, &c. 6d., Gaulochhead 1s., Dunoon 1s., and Rothsay 1s. 6d. and even those fares did no more than remunerate the proprietors. The Company say they have no interest in the steamers plying in connexion with the railway, that they were purchased by some of the shareholders, who were much interested in the railroad, but it is reported here that *the Company have guaranteed them from loss, and in the case of the Helensburgh boats it is quite clear that the Railway Company must pay the steam-boat proprietors, or they must suffer a total loss, AS THEY CARRY THEIR PASSENGERS FOR NOTHING.*

Some time since the Railroad Company advertised for steamers to run in connexion with their line, they offered to give 1s. to Rothsay, and in case that should not pay, *offered to guarantee them from loss*, but none of the steam-boat proprietors would go into their scheme; since then some of the parties interested in the railway have joined and bought several second-class boats. Now I am not aware of any clause in the Act of Parliament giving the Railway Company authority to favour one set of steam-boat proprietors more than another, either by granting check-tickets at the railway station, or by making GOOD THEIR LOSSES. The latter fact will, of course, be kept from the public and body of shareholders, as the amount paid would be mixed up with other payments, say "compensation," and nothing would be said on the subject. This is one of the Railway Companies who so stoutly resisted the clause giving the Government power to inspect their accounts. You will perceive the great disadvantage under which all boats lie that are not connected with the railway; for should the railway boat be ever so crowded, uncomfortable, or unfit for the voyage, and a stranger boat lying alongside bound for the same place, the passengers must stick by the railway boat, unless they choose to pay the extra fare, which they must have, as they get

Appendix.

IX.
Enforcement of
Provisions of
Railway Acts.No. 3.
Glasgow, Paisley,
and Greenock.

none of the bounty granted by the railroad. This grievance of being tied to one boat will be particularly felt on the Saturday afternoons and Monday mornings during the summer months, when hundreds go to the coast for a day or two; besides, it will be the means of striking at the root of all improvement in river steamers, as such a thing as competition will never be named.

I believe the fact of the matter to be, that the *Railway Company being desirous of getting a monopoly of the passenger-trade between Glasgow and Greenock, are determined, if possible, to make all the boats stop at Greenock and not proceed to Glasgow*, which would be as much against the interest of the public as against the boats, as they carry passengers at 1s. cabin and 6d. steerage, and pay their way.

You have the control of all railways, and I hope that something will be done to check this evil. Why not let all passengers who choose to go part of their journey by railway pay their fare to Greenock, and then let them be at liberty to go by any boat they may think proper; that is all I ask. And my only apology for troubling you is, my being slightly interested in two of the steamers.

I have, &c.

G. W. JOHNSTONE.

The Right Hon. the President of the Board of Trade,
&c. &c. &c.

No. X.

**STATEMENT OF THE TRAFFIC (*Passengers and Goods*) UPON
VARIOUS LINES OF RAILWAYS,**

During the Half-Year from 1st January to 1st July, 1841.

STATEMENT of the Number of Passengers and Quantities of Goods, &c., conveyed, and the gross Revenue derived there-

Name of Railway.	Number of Trains of each Class.					Average Speed of each Class.					
	Mixed.	First Class.	Second Class.	Third Class.	Total.	Including Stoppages.			Exclusive of Stoppages.		
						First Class.	Second Class.	Third Class.	First Class.	Second Class.	Third Class.
Arbroath and Forfar . . . . .	..	1,260	1,260	1,260	3,780	15	15	15	20	20	20
Ardrossan . . . . .	..	702	..	..	702	22	..	..	25	..	..
Birmingham and Derby Junction	..	Not distinguished.				19	19	19	23½	23½	23½
Birmingham and Gloucester . . .	..	..	..	..	..	20	20	20	23	23	23
Bolton and Preston	1,002	..	..	..	1,002	15	15	15	20	20	20
Bolton and Leigh	1,660	..	..	..	1,660	16	16	16	20	20	20
Brandling Junction	6,747	..	..	..	6,747	8	8	8	9	9	9
Canterbury and Whitstable . . . .	..	..	..	..	per day 18	21	21	21	28	28	28
Chester and Birkenhead . . . . .	..	..	..	..	per day 16	..	14	..	..	16	..
Clarence . . . . .	..	..	3	..	per day 3	18	18	18	24	24	24
Dublin and Kingstown	12,880	..	..	..	12,880	8	8	8	15	15	15
Dundee and Newtyle	1,126	..	..	..	1,126	17	17	17	25	25	25
Dundee and Arbroath	1,656	..	..	..	1,656	16	16	16	20	20	20
Durham Junction	3	..	..	..	per day 3	10	10	10	12	12	12
Durham and Sunderland	2,670	..	..	..	2,670	22	22	22	24	24	24
Eastern Counties	2,767	..	..	..	2,767	16	..	..	24	..	..
Edinburgh and Glasgow . . . . .	..	1,824	..	..	1,824	20	20	20	25	25	25
Glasgow and Garakirk . . . . .	..	..	..	..	per day 10	..	..	..	..	..	..
Glasgow and Greenock	10	..	..	..	2,184	18	18	18	20	20	20
Glasgow and Ayr	624	1,560	..	..	per day 10	29	29	15	33	33	18
Grand Junction . . . . .	..	..	..	2	per day 31	21	21	21	26	26	26
Great North of England	29	..	..	..	1,726	27½	20½	mixed	27½	24½	mixed
Great Western	1,726	..	..	..	per day 10	20	20	20	26	26	26
Hull and Selby . . . . .	..	per day 6	4	..	per day 10	12	12	12	15	15	15
Lancaster and Preston Junction . .	14	..	..	..	459	{7 h. 20 m. 1 h. 50 m.}			..	..	..
Leeds and Selby . . . . .	..	..	..	..	3,476	23½	..	13½	27	26	20
Leicester and Swannington . . . .	..	1,738	1,738	..	1,994	20	20	..	20	20	..
Liverpool and Manchester . . . . .	..	..	..	155	..	24	24	24	30	30	30
London and Birmingham	1,839	..	..	..	..	18	18	18	25	25	25
London and Blackwall . . . . .	..	..	..	..	56	17	17	17	19	19	19
London and Brighton, (Shoreham branch).	..	1	1	1	2,375	25	21½	12½	28½	27½	14½
London and Croydon	4,010	..	..	..	4,188	22	22	22	25	25	25
London and Greenwich	56	..	..	..	354	7	7	..	8	8	..
London and South Western	1,461	391	361	362	..	15	..	..	20	..	..
Manchester and Birmingham	4,188	..	..	..	per day 10	3½ m.	per	mile	2½	2½	2½
Manchester and Leeds . . . . .	..	..	354	..	618	14½	14½	14½	18	18	18
Manchester, Bolton, and Bury . . .	..	..	..	..	..	23	23	23	29	29	29
Maryport and Carlisle	618	..	..	..	..	20	16½	..	25	19	..
Midland Counties . . . . .	..	..	..	..	5,115	20	20	20	30	30	30
Monkland and Kirkintilloch . . . .	..	4	6	..	2,402	23	23	23	36	36	36
Newcastle and Carlisle . . . . .	..	..	..	..	2,249	22½	18½	18½	29	24½	24½
Newcastle and North Shields . . .	5,115	..	..	..	1,100	..	..	..	..	..	..
Northern and Eastern	2,402	..	..	..	1,292	16	16	16	20	20	20
North Midland	6	8	..	..	2,028	8	8	8	10	10	10
North Union	1,034	1,215	..	..	..	18	18	..	20	20	..
Preston and Wyre	1,100	..	..	..	..	15	20	..	15	20	..
St. Helen's and Runcorn Gap	1,292	..	..	..	..	18	18	..	24	24	24
Paisley and Renfrew	2,028	..	..	..	..	9	7	..	10	8	..
Sheffield and Manchester . . . . .	..	..	..	..	per day 2	..	5	..	7	7	..
Sheffield and Rotherham . . . . .	..	..	..	..	..	..	..	..	..	..	..
Slamannan	2	..	..	..	per day 2	..	..	..	..	..	..
Ulster	2,240	..	..	..	2,240	20	20	20	23	23	23
Whitby and Pickering . . . . .	..	per day 1	1	..	per day 2	..	..	..	..	..	..
Wishaw and Coltness . . . . .	..	..	2	..	per day 2	..	..	..	..	..	..

from, upon the various Railways of the United Kingdom, during the Half-year from 1st January to 1st July, 1841.

Number of Passengers conveyed by each Class.				Mileage.			Gross Receipt.							
First Class.	Second Class.	Third Class.	Total.	First Class.	Second Class.	Third Class.	First Class.	Second Class.	Third Class.	Total.				
981	3,517	40,643	45,141	d.	d.	d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.
24,342	..	..	24,342	1.809	1.382	.968	75 17 5	201 6 6	1,355 8 4	1,632 12 3	781 12 1	781 12 1	781 12 1	781 12 1
37,730	89,089	32,011	158,830	2½	2	1½	12,113 2 6	12,794 3 10	2,459 1 4	27,366 7 8	2,292 13 11	2,292 13 11	2,292 13 11	2,292 13 11
2,581	14,678	6,242	23,502	3	1½	1½	407 10 2	1,613 6 6	271 17 3	3,151 19 9	11,776 18 10	11,776 18 10	11,776 18 10	11,776 18 10
10,891	28,921	..	39,812	2.44	1.77	..	1,140 5 6	2,011 14 3	..	255 15 0	10,991 15 0	10,991 15 0	10,991 15 0	10,991 15 0
31,776	287,179	..	318,955	1½	1½	1½	..	..	..	679 4 7	17,015 9 0	17,015 9 0	17,015 9 0	17,015 9 0
..	..	..	10,325	1	..	..	..	..	..	..	1,300 6 3	1,300 6 3	1,300 6 3	1,300 6 3
20,479	39,466	100,233	160,178	2½	1½	..	..	..	..	..	4,156 14 7	4,156 14 7	4,156 14 7	4,156 14 7
..	11,924	..	11,924	..	1	..	..	679 4 7	..	..	807 5 8	807 5 8	807 5 8	807 5 8
10,158	351,543	327,652	689,353	2	1½	1	..	..	..	..	2,601 4 0	2,601 4 0	2,601 4 0	2,601 4 0
249	4,934	23,232	28,415	1.842	1.572	1.181	17 16 3	231 7 9	1,051 2 3	1,300 6 3	11,164 15 0	11,164 15 0	11,164 15 0	11,164 15 0
5,459	20,746	86,505	112,710	3.940	2	1.074	..	..	..	..	..	..	..	..
31,020	31,020	31,020	93,060	1½	mixed	..	..	..	..	..	..	..	..	..
..	..	..	68,779	1	..	..	..	..	..	..	..	..	..	..
22,534	47,506	81,317	151,357	2.65	1.87	1.46	2,757 10 10	4,095 15 2	4,311 9 0	11,164 15 0	..	..	..	..
3,153	69,701	..	72,854	1.316	8.61	..	155 12 3	2,055 6 6	..	2,210 18 9	..	..	..	..
37,813	90,274	141,549	269,636	1½	1½	..	4,722 10 8	6,892 0 10	6,066 19 6	17,681 11 0	..	..	..	..
133,350	60,813	20,656	214,819	..	..	..	100,142 16 1	24,624 10 9	9,301 8 3	146,068 15 1	..	..	..	..
7,675	20,047	3,689	31,411	3½	2½	1½	..	..	..	9,625 15 6	..	..	..	..
182,325	464,592	12,620	659,537	3.031	2.085	1.183	66,585 17 9	73,413 5 9	2,701 4 9	142,700 8 3	..	..	..	..
16,870	18,067	52,602	87,539	2.59	1.78	0.96	..	..	..	10,054 5 2	..	..	..	..
21,345	12,553	31,852	65,750	3	1½	..	..	..	..	8,927 18 7	..	..	..	..
14,161	18,030	29,263	61,455	3	2	1½	820 15 1	811 5 3	1,093 19 2	2,725 19 6	..	..	..	..
542	10,151	..	10,693	..	..	..	37 15 6	452 5 0	..	490 0 6	..	..	..	..
150,629	172,920	..	323,549	..	..	..	32,958 6 5	23,397 14 6	..	56,356 0 11	..	..	..	..
..	..	..	354,322	..	..	..	..	..	..	262,893 2 6	..	..	..	..
252,106	619,633	..	871,741	3	2½	..	..	..	..	16,629 18 4	..	..	..	..
10,266	17,662	39,046	66,974	..	..	..	..	..	..	1,927 13 6	..	..	..	..
63,078	145,936	18,937	227,953	2½	1½	..	5,157 1 3½	8,505 7 2	427 2 6	14,039 10 11	..	..	..	..
53,714	494,766	292,066	840,546	3½	2½	1½	..	..	..	26,468 17 9	..	..	..	..
98,548	168,153	14,752	281,453	..	..	..	..	..	..	88,474 3 8	..	..	..	..
9,455	28,055	261,120	298,620	3	2½	1½	..	..	..	8,366 16 1	..	..	..	..
46	1,158	..	1,204	1½	1	..	3 8 0	40 6 6	..	43 14 6	..	..	..	..
21,000	96,163	39,296	156,459	3.086	1.814	1.242	2,454 6 10	5,893 8 2	1,793 7 3	10,141 2 3	..	..	..	..
36,811	116,283	321,981	475,075	3	2	1	12,818 14 4	21,844 13 9	19,981 9 11	54,614 9 0	..	..	..	..
..	..	..	4,133	1½	1½	1½	..	..	..	133 9 3	..	..	..	..
43,516	93,582	78,252	215,350	3	2	2	..	..	..	35,791 14 7	..	..	..	..
36,239	110,100	..	146,339	3½	1½	..	4,588 11 7	9,088 1 6	..	13,676 13 1	..	..	..	..
..	..	..	297,210	1½	mixed	..	..	..	..	8,539 12 11	..	..	..	..
..	..	..	194,296	..	..	..	..	..	..	13,771 18 1	..	..	..	..
59,323	105,289	228,552	393,165	3	2	1	19,483 10 0	19,255 14 2	15,268 13 7	54,007 17 9	..	..	..	..
50,906	46,493	..	97,399	2.43	1.62	..	12,447 16 0	11,287 10 0	..	23,735 6 0	..	..	..	..
8,282	10,933	42,657	61,872	2½	1½	1½	1,335 0 0	1,213 0 0	2,432 0 0	4,980 0 0	..	..	..	..
..	..	..	13,181	4.29	4.29	4.29	..	..	..	531 3 10	..	..	..	..
3,273	38,232	..	41,505	6	4	..	81 16 6	637 4 0	..	719 0 6	..	..	..	..
..	..	..	148,623	..	..	..	..	..	..	4,993 9 4	..	..	..	..
3,633	19,020	..	22,653	2	1½	..	..	..	..	2,947 17 10	..	..	..	..
11,063	155,945	..	167,008	1½	..	..	..	..	..	4,386 4 6	..	..	..	..
2,716	3,581	..	6,297	2½	2	..	..	..	..	669 0 4	..	..	..	..
..	5,512	..	5,512	..	..	..	..	7 12 0	..	7 12 0	..	..	..	..

The Preceding

Name of Railway.	Number of Trains for Conveyance of				Average Speed, including Stoppages.	Number and			
	Cattle.	Sheep.	Pigs.	Goods, Merchandise, &c.		By the Company as Carriers.			
						Cattle.	Sheep.	Pigs.	Goods, Merchan- dize, &c.
	No.	No.	No.			No.	No.	No.	Tons.
Arbroath and Forfar	1,260 journeys	12 miles per hour . .	..	..	..	28,333
Ardrossan	264 journeys	6 miles per hour . .	..	..	..	20,271
Ballochney	5 miles per hour . .	..	..	..	67,615
Birmingham and Gloucester	19 miles per hour . .	50	150	200	..
Bodmin and Wadebridge.	Upwards, 6 m. per hour, downwards, 8 m. ditto.	..	..	..	15,273
Bolton and Preston
Bolton and Leigh	930 journeys	18 miles per hour . .	..	..	540	37,287
Branding Junction . . .	1	1	1	1 train per day	14 miles per hour . .	22	365	425	9,921
Canterbury and Whitstable	18 trains per day	8 miles per hour . .	..	..	..	..
Chester and Birkenhead	21 miles per hour . .	5,090	150	100	463
Clarence	3 trains	14 miles per hour . .	..	..	..	..
Dundee and Arbroath	620	620	620 journeys	13 miles per hour . .	..	92	2	7,709
Dundee and Newtyle	854 journeys	6 miles per hour . .	..	..	..	15,970
Dunfermline and Charles- town.	3 miles per hour . .	..	..	..	14,642
Durham Junction	Not kept	10 miles per hour . .	..	..	..	193,969
Durham and Sunderland	Same as passenger- trains.	383	917	7,069	..
Eastern Counties	6,306
Edinburgh and Dalkeith	1,786 journeys	3 to 4 miles per hour .	..	..	..	..
Ditto, Leith Branch	1,316 journeys	8 miles per hour . .	..	..	..	163,016
Garnkirk and Glasgow	340 journeys	8 to 10 miles per hour.	168	1,252	42,494	36,466
Grand Junction	605 journeys	12 miles per hour . .	1,087	4,163	1,207	40,548
Great North of England	2 trains	15 miles per hour . .	1,599	23,118	4,849	25,119
Great Western	2	2	2	. . . . .	14 miles per hour . .	190	13,799	50	9,269
Hull and Selby	420	..	..	. . . . .	15 miles per hour . .	..	..	..	884
Lancaster and Preston Junc- tion.
Leeds and Selby	5 trains per day	12 miles per hour . .	822	14,175	78	17,568
Leicester and Swannington	1,071 journeys	12 miles per hour . .	..	..	..	95,795
Liverpool and Manchester	1,632 journeys	15 miles per hour . .	378	422	41,536	137,910
Llanelli and Llandilo	354 journeys	7 miles per hour . .	..	..	..	11,833
London and Birmingham	477 double journeys	20 miles per hour . .	..	..	..	..
London and Blackwall	4 trains	15 miles per hour . .	..	..	..	13,042
London and Brighton— Shoreham Branch.	Classes 1 2 3 4 5 6 7	. . . . .	..	..	..	..
London and Croydon	Trains 39 125 261 112 28 13 33	15 miles per hour . .	..	..	..	10,752
Manchester and Birming- ham.	10 trains per day each way .	17 miles per hour . .	..	..	..	7,903
Manchester and Leeds	Conveyed in passenger-trains	Same as passenger trains	..	..	..	..
Manchester and Bolton	618 trains	14½ miles per hour . .	3	..	1	26,072
Maryport and Carlisle
Midland Counties	4	4	All trains	4 trains	Cattle &c., 23 m. per hour, Goods, 20 m. per hour.	2,835	9,128	..	..
Monkland and Kirkintilloch	23 trains per day	5 miles per hour . .	..	..	..	207,042
Newcastle-upon-Tyne and Carlisle	5 trains	per day each way	16½ miles per hour . .	2,053	18,810	1,566	129,315
Newcastle and North Shields	No. of Small Parcels. 19,274
North Midland
Northern and Eastern	23 miles per hour . .	28	9	..	..
North Union	Uncertain . . . . .	..	..	..	38,099
Paisley and Renfrew	15	..	26	2,736
Preston and Wyre	156	156	156	156 trains	13 miles per hour . .	85	221	6	20,083
St. Helen's and Runcorn } Gap	{Classes 1 2 3 4 } Trains 465 465 624 624	8 miles per hour . .	..	..	..	126,459
Sheffield and Rotherham	15 to 20 miles per hour	..	..	..	15,851
Slamannan	1 train per day	12 miles per hour . .	..	..	..	..
South Western	724	724	724	724 trains per day	12½ miles per hour . .	619	20,950	291	22,930
Ulster
Whitby and Pickering	5 trains per day	3 to 5 miles per hour .	..	..	..	21,009
Wishaw and Coltness	52,741

Account,—continued.

Quantities conveyed.								Gross Receipt.				
By other Carriers.				Total conveyed by the Company and other Carriers.								
Cattle.	Sheep.	Pigs.	Goods, Merchandize, &c.	Cattle.	Sheep.	Pigs.	Goods, Merchandize, &c.	On Cattle.	On Sheep.	On Pigs.	Total on Goods, Merchandize, &c.	Grand Total.
No.	No.	No.	Tons.	No.	No.	No.	Tons.	£.	£.	£.	£.	£.
..	28,333	..	..	..	2,531	2,531
..	20,271	..	..	..	1,252	1,252
..	169,814	..	..	..	237,429	..	..	..	7,023	7,023
..	50	150	200	7,194	14	6	34	3,576	3,630
..	15,273	..	..	..	1,407	1,407
..	13	..	..	13
..	8,108	..	..	540	45,395	Cannot be distinguished.			1,620	1,620
..	22	365	425	9,921	..	..	..	3,072	3,072
..	5,090	150	100	463	194	2	2	626	824
..	798	..	..	..	798	..	..	..	160	160
..	92	2	7,709	..	2	..	1,270	1,272
..	15,970	..	..	..	1,832	1,832
..	14,642	..	..	..	1,611	1,611
..	193,969	..	..	..	11,167	11,167
..	383	917	7,069	8,369	57	16	137	244	454
..	64,362	..	..	..	3,607	3,607
..	17,085½	..	..	..	17,085½	..	..	..	658	658
..	168	1,252	42,494	36,466	67	90	5,042	6,560	6,560
..	1,087	4,163	1,207	46,692	..	..	..	40,918	46,117
..	1,599	23,118	4,849	25,119	..	..	..	23,896	23,896
..	10,397	190	13,799	50	..	..	..	..	5,072	5,072
..	6,031	..	..	..	6,916	..	..	..	850	850
..	10,491	822	14,175	78	28,059	47	189	2	6,770	7,008
..	227	..	..	..	96,022	..	..	..	9,741	9,741
..	378	422	41,536	137,910	900		2,342	46,880	50,122
..	3,771	..	..	..	15,604	..	..	..	1,407	1,407
5,404	21,814	2,841	68,326	5,404	21,814	2,841	68,326	1,677	1,262	166	67,617	70,722
..	13,042	..	..	..	1,169	1,169
..	10,752	..	..	..	1,431	1,431
2,218	19,848	13,601	37,927	2,218	19,848	13,601	45,830	307	525	807	17,155	18,794
..	41,483	..	..	..	4,421	4,421
..	3	..	1	26,072	..	..	..	2,206	2,206
..	29,120	2,835	9,128		29,120	..	1,013		8,833	9,846
..	424,876	..	..	..	631,918	..	..	..	8,846	8,846
..	2,053	18,810	1,566	129,315	451	487	50	24,426	25,414
..	No. of Small Parcels.	..	..	..	..	..
..	19,274	..	..	..	..	..
..
..	28	9	..	..	6	1	..	..	7
662	4,067	..	26,031	662	4,067	..	38,099	..	..	..	4,582	4,582
..	15	..	26	2,736	3	..	9	288	300
..	65	221	6	20,083	5	7	..	2,846	2,858
..	126,459	..	..	..	5,884	5,884
..	34,554	..	..	..	2,028	2,028
..	16,194	..	..	..	..	..
..	5,462	619	20,950	291	28,392	372	1,001	15	20,458	21,846
..	22	136	2,180	..	..	..	..	33	33
..	20,485	..	..	..	1,833	1,833
..	106,586	..	..	..	259,662	..	..	..	5,668	5,668

Appendix.

XI.

Leipsic & Dresden.

XI.—LEIPSIC AND DRESDEN RAILWAY.

REGULATIONS OF THE COMPANY, AND INSTRUCTIONS TO THE VARIOUS OFFICERS AND SERVANTS.

Regulations on the 1st January, 1841.

1. The length of the line between Leipsic and Dresden is 202,798 yards, or 15½ geographical miles (72 English miles.)

2. The length of the Magdeburg branch line to the frontiers is 20,572 yards, or almost 1½ geographical mile.

The present means of transport consist of 22 locomotive engines, and 236 carriages.

The 236 carriages consist of—

13	carriages of the 1st class, with 4 wheels		
32	„ 2nd	4	„
57	„ 3rd	4	„
2	„ 3rd	6	„ Holding 20 persons each, and having luggage room for about 20 cwt.
1	„ 3rd	8	„ Holding 100 persons.

105 carriages, in which more than 3,300 persons can be conveyed.

115 luggage wagons with 4 wheels, carrying each from 80 to 100 cwt.

4 „ „ 8 „ „ 200 to 250 „ „
12 „ „ for the conveyance of carriages and horses.

131 luggage wagons, which can carry more than 12,000 cwt.

General Police Regulations.

General Police Regulations.

The safety of the public requires, that all railway travellers should be most earnestly recommended to obey the following regulations:—

They must always get in and out at the side of the carriage opened by the guard, and should always listen to his recommendations.

They must not get out at the intermediate stations, as the train does not often stop longer than a minute. *At the station at RIESA alone, the mail train will be kept 10 minutes.* The getting in and out at the destined places, must take place as quickly as possible, and therefore they must have everything in readiness before the arrival of the train.

After the carriages are set in motion, they must make no attempt to get in; as persons arriving late have been known to do; nor must they help any such person in getting in, as it is attended with the greatest danger, as several sad accidents in other countries have shown. On this account, an order has been given, that no one but the guard may open and shut the carriage doors.

During the journey, they may not put their heads out of window, stand up, stand upon the seats, nor lean against the door; also they may not leave their places till the carriage has arrived at its destination, and must not get out till it stands *perfectly still*.

After they have arrived at the station, they must keep at a distance from the rails and engines, and must not leave the road, except in the direction pointed out to them.

The guards are instructed not to allow drunken or sick persons, nor all those who by their presence, or unseemly conduct, are troublesome to their fellow-passengers, to enter nor to continue in the carriages. In such cases, the public are requested to aid the guard in enforcing this regulation, which is necessary for the general safety and comfort.

Any *mislaid articles*, which are found on the road, or in the carriages, must be given in through the guards and plate-layers, to the luggage office at Leipsic. Everything which is not claimed by its owner, will be sent at the end of every month, to the general safety office, which will cause it to be advertised.

The guards, porters, and other officers, are forbidden to *ask any gratuity* for their services.

As the Board of Directors is desirous to learn, and if possible to redress any well-grounded *grievances* of the public, the passengers are requested to write down any complaints in a book placed for that purpose at every station. If any complaints be made of the officers, their *numbers* and *names* must be given, as without this information, no investigation could be attended with success.

Every mail train is accompanied by a conductor, who must see that everything is in order, and any complaints may be made direct to him.

Regulations for the Passengers.

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Passengers must always keep their tickets about them, and must have them always ready for revision. Whoever is found without, or with an incorrect ticket, must immediately and unconditionally pay the money for the whole extent of the road, for the place which he occupies, and will, if it be thought necessary, be put out upon the road. The ticket is only valid for the journey stamped upon it, and the holder must immediately prove whether it be in accordance with the desired journey. No after demand for restitution will be attended to. Money once paid will on no condition be given back.

Little children, who are not yet able to walk, and all children in arms go free. Older children under 10 years of age, may be taken in the first and second-class carriages with third class tickets; but they must make no claim to a seat, and are taken on the express condition that their friends will take them between their knees, or on their laps, if all the places in the carriage are occupied. Whoever will not submit to these conditions, and wishes to secure a place, must take tickets for the first and second class for their children.

The numbered places in the *first-class carriages* may only be occupied by the holders of the tickets numbered to correspond. The places in the other class carriages are without numbers, but the closed coupés, for eight persons, in the second-class, may be secured; besides this no securing of places, nor favouritism is allowed.

SMOKING is on no condition allowed in the FIRST-CLASS carriages. For every offence, the person convicted must pay a fine of one thaler, which will go towards the assistance fund. Dogs may not be put in the carriages with the passengers, but may be taken with tickets for one ngr.* per mile in separate conveyances, although no guarantee whatever is given for their safety.

The exchange of a ticket for a later journey may only take place when illness can be proved, if it be produced and signified before the hour of departure fixed upon the ticket, and when the coupon has not been torn off; on the last condition the tickets may be exchanged for a better class carriage. In case the coupon should have been torn off the ticket before setting off, or if any one should wish to proceed in a better class carriage at an intermediate station, if the passenger have a second-class ticket, he must get a third-class ticket in addition, in order to be enabled to go in the first-class carriages. With a third-class ticket another of the same class must be taken in addition, in order to qualify the passenger to go in the first or second class, subject, however, to there being places vacant.

The delay at the stations and other stopping places will not be longer than is necessary to dispatch the train, and will therefore be a very short time, often only a minute. At Riesa alone, the train will stop 10 minutes.

If the departure be delayed, it will give no ground for claims of any kind.

If a journey be interrupted, those only are justified in asking for repayment of the money paid *pro rata*, who have not been able to proceed afterwards by the same train, or by another.

Each passenger is allowed to have luggage free to the amount of 50 lbs. weight. If several persons pack their luggage in one parcel, they may not lay claim to more than 50 lbs. weight free for the whole. Over-weight is charged at the rate of 2½ ngr. for every 10 lbs. for the whole line of road, and for the intermediate stations according to the tariff. The luggage must be marked with the proprietor's name, and place of destination, and must be brought, the passenger's ticket shown with it, and any over-weight paid for, an hour before departure. If this be not attended to, it is the passenger's own fault if it be not sent on. The luggage will be received in any quantity in the warehouses, and if no other agreement be made, receipts valid for three days will be given for it gratis, by which the Company guarantee the luggage at one thaler per pound. Whoever wishes to insure his luggage as worth two or three thalers per pound, must pay ½ per cent. for the difference between the declared value and one thaler per pound, for which he will receive the proper receipts. After the receipt has been given, the passenger's ticket will have the luggage stamp placed upon it, and the door-keepers and guards are not allowed to let any more luggage than is marked upon the ticket be taken in the passengers' carriages. The passengers are therefore requested to send *all* their luggage to the station, in order that no time may be wasted in useless discussions. According to the contents of the receipts, the Company is only answerable to their holders, on which account they must be carefully kept, as the luggage will only be given up, on the receipt being given back, which frees the Company from all further demands; failing that the passenger is obliged to give satisfactory assurances before his luggage is delivered up to him. The holder of the receipt can, if he please, demand his luggage on giving back the receipt within 24 hours after arriving at his destination, and within the regular office hours, if he do not wish to wait till the luggage be given out, and will not let it be conveyed by the porters belonging to the Company. At the expiration of the 24 hours, one ngr. warehouse rent will be daily demanded per package, and they will not be guaranteed against injury or loss. Defective or insufficient packing puts an end to all claims, if the luggage be injured. Packages which contain liquids, which might cause any injury, may not be given in to be taken in the luggage waggons; if they be taken, the proprietor is answerable for all damage caused to other packages or otherwise. In the charges, the half-groschen will always be reckoned as a whole, but generally no money will be demanded for over-weight when for less than three ngr.

* Ngr.—groschen, 5 of which equal 6d. English.

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Packages of more than 50 lbs. weight may not be taken as passenger's luggage, according to section 93 of the Toll Regulations. They may, however, be taken by any of the quick passenger trains in any quantity required, if provided with bills of lading describing the contents, and otherwise in accordance with the Toll Regulations, and if they are brought two hours before the departure of the train.

Passengers, going by the luggage-trains, must also observe the foregoing regulations. The getting in and out at the stations must take place as quickly as possible. It is indispensable that both passengers and luggage should be in readiness before the arrival of the train at the station. It is also indispensably necessary that the proper fare should be kept in readiness; as there is no time for changing larger pieces of money. It is the passenger's own fault, if he be left behind, from neglecting this necessary preparation.

Those who go the whole length of the line, or from one station to another, may procure tickets from the booking-clerk at each station, the same as those used for the second-class carriages of the passengers' trains; which will be stamped accordingly, and entitle him to ride in a close carriage. For the open carriages, different tickets will be given, which only cost 38 ngr. for the whole journey. Passengers by these trains may receive receipts for their luggage, if required, under the same conditions as those going by the passenger-trains. The passengers, who go by the luggage-trains from a station to an intermediate stopping-place, or *vice versa*, or from one stopping-place to another, will receive the tickets required from the booking-clerk who accompanies each of these trains. Each of these tickets will cost 2½ ngr. for the open carriages, and is valid to the next stopping-place. For a place in the close carriages, two tickets must be procured. Every passenger by the luggage-trains may have 50 lbs. weight of luggage free. Whoever may wish to take more than 50 lbs., and up to 100 lbs. weight of luggage, must procure a ticket for 2½ ngr.; for which it will be brought to its destination.

With luggage, or goods, of more than 100 lbs. weight, for every 25 lbs. over, a 2½ ngr. ticket must be procured. For any luggage taken by the passengers without a receipt, the Company will be in no wise answerable; and every proprietor must take care of it himself.

Goods, provided with bills of lading, coming from, or going towards, any intermediate stopping-places, will be treated as set down in section 1 of the Regulations for the loading of goods.

The porters at Leipsic will receive for every moderate-sized trunk of about 60 lbs. weight, portmanteau, &c., 2½ ngr.; for smaller articles, as carpet-bags, hat-boxes, &c., 1 ngr.; and for any unusually large or heavy packages, according to the table of prices. At Dresden the porters' fees are rather higher, as set down in the police charges, on account of the greater distance. But every passenger is at liberty to take his luggage with him, or, on his ticket being shewn, to have it brought, or to have it fetched on sending back the receipt.

The conveying a carriage to or from the station costs 10 ngr. at Leipsic, and according to the distance at Dresden.

For the conveyance of a carriage with four wheels on the rail-road, 25 ngr. per mile is to be charged; for two-wheeled cabriolets, and for small one-horse carriages with shafts, and without any luggage, 20 ngr. per mile. Those persons who perform the journey in their own carriages, must procure second-class tickets; and those sitting on the box, third-class ditto.

If horses are to be conveyed, notice must be given of it at the stations at the termini some hours before, and some days before at the intermediate stations; and they must be paid for beforehand, according to the table. Those persons who go in order to take care of the horses must procure tickets. Horses and other animals will not be taken without some person to look after them, as the Company will not be answerable if they are injured, or should die during the journey.

Regulations for the
 Loading of Goods.

Regulations for the Loading of Goods.

1. The Company is answerable for all goods committed to their charge when provided with bills of lading, and if the following Regulations be recognized when given to them direct, or to the authorized porters, for their being delivered in good condition, and for any perceptible injuries suffered from the time they are taken charge of, till they are delivered at the house, or warehouse (with the exception of the cases mentioned in sections 14 and 17); but it is in no wise answerable for the contents of the packages, nor for any after-demands, whatever may have been the contents of the bill of lading. Every injury which has happened through ignorance of the Rules to the consigner or consignee, concerns them alone. Articles which are badly or insufficiently packed will be indeed taken, but the Company will be in no wise answerable for them. Goods which are delivered to the Company's porters, of which the bills of lading are imperfectly or insufficiently directed, or with indistinct directions, will be left at the risk of the consigner till this defect be rectified.

All articles given for transporting, whether they are conveyed over the whole line, or a portion of it, are assured by the Company against fire, on their own cost, according to the value declared in the bill of lading, if it be not more than 50 thalers per cwt. Goods, without any declared value, therefore, will be assured at their value, if under, or at most, 50 thalers per cwt.; and, in case of any injury, no more will be granted, although a higher value may be proved. For any greater value, declared in a bill of lading, the consigner must pay a premium of but 5 pf. or ½ ngr. for every 1,000 thalers more, or must endorse the

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same upon the bill of lading, for which any amount (for example, an over value of 60,000 thalers for the small premium of one thaler) will be assured by the Company. In receiving this premium, from 1 to 999 thalers will be reckoned as 1,000 thalers; and, according to the general regulations of the Company, any portion of a groschen will be reckoned as a whole. Any injuries from fire will be paid for according to the declared amount of damage proved. *Any unpaid articles* taken from stations, or stopping-places, will only be taken to the eight stations. Goods, sent with a bill of lading *to the stopping-places* between the eight stations, must be paid for; and care must be taken that there is somebody there to receive them, as the Company will only guarantee them till their arrival at their destination. If *goods be sent to or from the stopping-places*, they must be in readiness; in order that they may be loaded and unloaded quickly, without causing any unnecessary delay. If whole wagon-loads are to be taken, notice must be given before-hand. The freight will be reckoned according to the table of prices, and from the station passed before the goods were loaded, to the station reached after they are unloaded.

2. *All goods coming to be loaded, must be provided with bills of lading stamped according to law, or with full directions.* Cotton goods, or such as are mixed with other substances, sugar, coffee, tobacco, wine and brandy of all kinds according to section 93 of the Customs' Regulations of the 3rd of April, 1838, must, when sent by the railway, be provided with bills of lading, stamped by the proper officer, if the first two articles are in quantities of $\frac{1}{2}$ a cwt. and more; and the others in quantities of 1 cwt. and more. With brandy or wine *of home growth*, this assertion will be sufficient, with a corresponding certificate from the custom-house of the place.

3. *Single packages of 20 lbs. and under*, as well as sealed letters, will not be taken, as they are subject to the regulations of the post.

The advance of money for freight, will be made without commission, although only at pleasure, or upon such goods as give the necessary security. Besides this, or upon goods which are liable to spoil, no payments of money will be made till they have been received.

5. All goods are weighed according to the Customs' weights, and the freight per 100 lbs. is divided in three classes, viz.—A, quick conveyance by the passenger trains; B, conveyance for goods; and C, conveyance for produce, by the luggage-trains.

6. If a notification be sent with the proper address of the consigner, and with the probable weight, (for which notifications formulæ are given gratis, and which are collected daily at 10 and 4 o'clock, from the boxes placed in the train and at the station), all goods comprised in sections A and B, will, at Leipsic and Dresden, be fetched gratis from the consigners, and any goods which have arrived will, if a receipt be given, be brought to the houses of the consignees mentioned in the bill of lading. For goods which, at the orders and expense of the consignee, are to be brought *into the house, into the warehouses, over steps, &c.*, the fixed fees are to be given to the porters. Goods which are to be delivered at the Custom-house, will only be taken there by the Company's porters, upon a written order or receipt from the proprietor, but they will not be fetched thence nor conveyed farther. The porters deputed to fetch goods are marked by a number and badge, with the words, Leipzig-Dresden, Eisenb.-Co., (Leipsic and Dresden Railroad Company.) Each porter has a book marked with his number, in which every consigner is requested to inscribe under his name the number of packages given, as the porters are only answerable for the number of packages inscribed in their books. *When goods under section A are to be sent by quick conveyance with the passenger-trains*, it must be expressly so said in the bill of lading, and a notice must be given of it in the box hung up at the door of the lodge at the station, at least four hours before the departure of the train, or they must be brought to the station at least two hours before. At the intermediate stations, consigners and consignees must themselves provide for the conveyance of their goods to and from the railroad.

7. In weighing and charging for goods comprised in sections A and B, if the bill of lading contain less than 50 lbs. weight it will be charged as for 50 lbs.; this excepted, an increase takes place with every 10 lbs.

8. In weighing and charging for produce comprised under section C., if it be of low value and in large quantities, such as corn, potatoes, stones, lime, wood, coals, peat, turf, manure, &c., an increase will take place with every 50 lbs. The consigner and consignee must always provide themselves for the conveyance to and from the railroad, of goods comprised under this section. If any one at Leipsic and Dresden should wish to use the Company's carts for this purpose, he must make an especial arrangement.

9. In reckoning and levying the freight charges, half a groschen will always be reckoned as a whole, and any less sum will not be reckoned at all. Under 3 ngrs. no charges will be raised.

10. The cubic contents of dry timber will be reckoned by the Cottaschen Tables, and the weight for every cubic foot of hard wood, such as oak, beech, elm, maple, ash, birch, &c., will be reckoned at 40 lbs.; and of soft wood, such as deal, pine, lime, poplar, alder, &c., at 30 lbs. The weight reckoned for quite fresh or wet wood, is subject to especial agreement. A cord of fire-wood one yard long, will be reckoned at only 1200 lbs. for soft, and 1,400 lbs. for hard wood; longer kinds in proportion. The weight of corn, rape-seed, potatoes, lime, coals, peat, turf, manure, and other articles of low value, will be determined in single masses, or in whole wagon-loads by the weigh-bridge. Corn will be taken only in sacks. Whoever wishes to load turnips, potatoes, &c., without sacks, must give notice of it, and superintend the loading and unloading.

11. Timber and beams will be taken only in entire loads of about 200 cwt., as particular wagons must be got ready.

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12. Sandstone will be reckoned at 100 lbs. for every cubic foot. The Company, however, will not be answerable if stones be broken or injured, nor for any *fragile articles*, which are loaded *without being packed up*. But such articles will always be treated with the greatest possible care.

13. No gunpowder, fulminating silver, nor any articles made inflammable by friction, may be sent by the railroad; whoever acts contrary to these orders, must be answerable for any damage caused.

14. *Dangerous substances, viz.*, nitric and sulphuric acids, fermenting liquids, &c., on account of the precautionary measures necessary, can only be taken after a special agreement; and, if it be thought proper, the charges may be raised. Such articles must always be brought to the station by the consigners, and must be fetched by the consignees, as the Company will only be answerable for them whilst they are being conveyed on the railroad; and will not be answerable at all for fermenting liquids, but the proprietor must himself be answerable for any damage caused by them. If such substances should be delivered without the proper declaration and agreement, or, indeed, packed up with other things, the consigner must himself pay for any damage caused.

15. The rate of charges for any *extraordinary articles, or any that require much room*, will be fixed by special agreement. *Articles of furniture*, which must always be sent by the consigners to the railroad, and fetched by the consignees, will in no wise be guaranteed against injury, although they will be treated with the greatest possible care.

16. *Live animals* will not be taken without some person to look after them; and the Company will not be answerable for them if they should be injured, or die on the road.

17. *Specie* will only be taken in silver, and by the passenger-trains, charged for as under section A., and neither fetched nor sent. The consignee must give such consignments packed in strong packages, with bills of lading describing the contents, an hour before the departure of the train, to the proper officer, who will give him a receipt for them, with the date of the hour. On the arrival of the specie, the bill of lading will be presented to the consignee, who must note down upon it the hour that it was presented, and must fetch the packages within an hour, on giving a receipt. The Company will not be answerable if the packages be brought sooner, or taken away later; therefore, on Sundays and holidays no specie can be taken, except at the time of the fair at Leipsic.

18. Goods, which are not taken away within 24 hours after their arrival at the station, will be housed at the expense of the consignees, and pay half a ngr. *warehouse rent* per 100 lbs. for every 8 days, without deduction for a shorter time. The Company will only be answerable for thefts which can be clearly proved; and, that excepted, for no kind of loss or injury.

No. 1.

No. 1.
 Instructions for
 Conductors.
 General
 Regulations.

INSTRUCTIONS FOR CONDUCTORS.

General Regulations.

Although officers are appointed to each department, yet they are all required to assist each other in cases of emergency.

The orders proceeding from a superior officer are to be promptly obeyed, although they may be given by one who is not the immediate superintendent. These officers ought however to give the earliest notice thereof.

If any directions given appear to be contradictory to the regulations, he who has given them must give notice to his chief, or, if he please, to the agent in Dresden, or to the Managing Director in Leipsic.

He who has received an order differing from the ordinary regulations, is also bound to give a speedy notice of the same. All notices are, as a general rule, to be addressed to the nearest superintendent.

Each officer is answerable to his chief, he again to his superior, and all are answerable to the Board of Directors.

All officers are to receive and give warning, if not expressly agreed otherwise, according to the time of their engagements; those who receive weekly payments are to give or receive a week's notice; those who are engaged by the month, a month's notice; and those who are engaged by the year receive three months' notice. All workmen engaged by the day, may be discharged at any time.

According to the regulations, which will hereafter be more defined, each officer is obliged to contribute to the Pension and Aid Fund.

The duties of the service are comprised in the following special instructions, with which every one must make himself accurately acquainted, so that he may execute the orders of his superiors with alacrity, diligence, assiduity, and fidelity, and may serve the interests of the Company to the best of his abilities, taking care that his fellow-officers and subordinates do the same. It is especially the duty of every one to maintain morality, sobriety and order, and to keep a decent appearance, to show civility to the public, to be on good terms with his fellow-officers, and to be under subordination to his superiors.

Opposition to a superior, drunkenness, abuse of trust, or fraud will be punished with instant dismissal. Irregular conduct may be punished in the same manner.

Each officer is answerable for neglect or insufficient performance of duty, and the consequences ensuing therefrom, and will, besides the civil and criminal prosecutions which

are instituted in such cases, be punished by reprimand, a suitable fine, degradation, or even instant dismissal.

Should any opposition to orders be remarked in the service, notice is to be given to the superintendent, for farther enquiry; he who neglects to give such notice, will likewise be answerable for the mischief arising from his neglect.

The police regulations emanating from the government for the safety and proper accommodation of the public, are to be strictly and punctually followed. Every one is to take care that they be maintained and obeyed, and to give the earliest information to the superintendents of any transgression of the same.

The Board of Directors reserves to itself the privilege of making any alterations in the given instructions, which circumstances may render advisable. The officers whom these instructions concern are obliged to sign them, and always to keep them by them. Doubtful or unforeseen cases may be deferred to the superintendent.

Special Regulations.

1. The superiors of the conductor are:—

The Board of Directors.

The Managing Director; the Agent in Dresden.

2. The conductor has unlimited authority over the superintendent of luggage and guards, as well as over the engine-driver and stoker attached to the train, during the time of the journey.

3. He has the entire care of the arrangement of the trains entrusted to him; on which account he becomes answerable for all improper conduct which comes under his cognizance, unless he immediately correct, reprove, or give information for punishment.

4. As a badge of the command intrusted to him, the conductor receives from the Board of Directors a small white and light-blue flag, which he must always carry while on duty, and with which he must make the requisite signals.

5. It is the duty of the conductor to ascertain each time before starting, that everything concerning the train is in fit condition, and immediately to give the necessary notice of any defect or negligence which he may discover.

6. The engineers and superintendents of the intermediate stations, must give him, whenever he may require it, all possible assistance, and must, on his responsibility, furnish him with whatever materials, workmen, &c. he may need. The inspector of the plate-layers and the plate-layers must also, in every case furnish, whenever he may require it, the most practicable and effective assistance.

7. The conductor must take care that there be sufficient accommodation in the trains for the passengers and goods, and must give timely notice to the engineer when he thinks that an extra engine will be required. He must also take care that the carriages which he may consider necessary, may be always ready and immediately supplied at the intermediate stations.

8. The conductor has absolute authority over the guards allotted to him; he is to distribute as many as are requisite among the trains, and to send the remainder to the superintendents of luggage, who have to arrange the baggage trains. An ordinary train of from 10 to 14 carriages, must be provided with—

- 1 superintendent of luggage.
- 1 guard on the tender.
- 3 guards on the break.

A train with two locomotives requires one or two more guards.

A luggage train requires, besides the conducting superintendent of luggage—

- 1 guard for the tender.
- 2 or 3 guards for the break.

The guards are expressly directed to be always at hand at the loading and unloading of the goods, passengers, baggage, equipages, &c., as well as to attend with alacrity and diligence to the orders concerning the passenger trains.

9. The conductor must also ascertain that there are at hand in each train—

- 2 windlasses, besides the tender windlass.
- 1 strong rope, and several cords.

4 reserve chains and other implements necessary for the guards and superintendents of luggage; and that any neglect in this respect be reprimanded and punished.

10. All implements necessary for the trains, and the guards, will be under the charge of the conductor; he must take care that they be properly inspected, and that an inventory be taken of them.

11. He must take special care that all the breaks are in good and proper order.

12. The conductor must also watch that passengers do not go without tickets; and that all the tickets are copied and revised by the guard before setting out, or on the way to the next station, whereby he, as well as by the arrangement of the passengers in their places, may be enabled to help them in case of necessity, and may see that the public are treated with attention and civility.

13. The special charge of the luggage certainly belongs to the superintendent of the luggage; but nevertheless, the conductor must have an eye on it, and see that the superintendent has taken the required papers, and that he delivers and receives the goods quickly and properly.

Appendix.

XI.

Leipsic & Dresden.

No. 1.

Instructions for
Conductors.

Special
Regulations.

Appendix.

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Leipsic & Dresden.

No. 1.
Instructions
for
Conductors.

14. He has also to see at each station—
 - (a) That the engine be strictly examined by the driver, and quickly supplied with fuel and water, and also that the stoppages be as short as possible, if no directions have been given to the contrary.
 - (b) That the baggage be quickly arranged.
 - (c) That the passengers arriving do not pass without tickets, and that those of the travellers proceeding be properly revised.
 - (d) That he see that the superintendent of the carriages quickly examine if the carriage-wheels, grease-boxes, axletrees, breaks, drags, and safety chains, are in good order.
15. Before and during the journey he must be most watchful—
 - (a) That the engine-drivers, guards, and plate-layers give, and are mindful of the prescribed signals.
 - (b) That the prescribed time be properly kept; but besides the quickness of the journey, he must be careful that in no case, nor place, the engine be over driven.
 - (c) That the entrance into the station-sheds, and through the sidings, be effected with the greatest caution and slowly.
 - (d) If on the road he remark that by the jolting or shaking of the train any part of the road requires to be mended, he must give notice of the same at the next station, or at the chief office of the road-engineers.
16. In the night journeys he must be still more on the alert, and especially watch that all the signal tackle be in good order, viz.—
 - (a) That all the guards carry their signal-lanterns lighted.
 - (b) That on the last carriage of the train two lanterns be so hung, that they may be always seen from the tender, and by any train which may be following.
 - (c) That the signals of the plate-layers are given according to the directions, and that immediate notice be given to the engineers whom it may concern, of any neglect of the same.
 - (d) Especially that the entrance into the sidings and station-sheds be made slowly, and with the greatest caution.
17. The conductor must keep an exact journal of each journey according to the prescribed plan, and give a copy thereof to the chief office.
18. If the conductor accompanies the baggage trains, he must take care that the loading and unloading of the goods be executed according to the directions, and to prevent any damages or embezzlements from taking place. Generally, he must act according to the instructions given to the superintendent of luggage, who is also in this case responsible.
19. He must also take care that no persons are taken by the luggage-train without tickets properly numbered by him, and that such tickets be not used farther than they are valid.
20. The same proceedings must take place, if passengers be taken up by the passenger train at the stations, Borsdorf, Posthausen, Machern, Weintraube, Hotzschbroda, &c.
21. Those tickets which the conductor receives from the chief office or booking-clerks, are to be accounted for by him daily or weekly.
22. The signals or other correspondence relating to his or any following train, are in all cases under his management alone, therefore he becomes answerable for all negligence which can be referred to him.

No. 2.

No. 2.
Special Directions
to the Guards.
General Rules
of the Service.

SPECIAL DIRECTIONS TO THE GUARDS.

I.—General Rules of the Service.

1. The superiors of the Guards, are :—

The Conductors,
The Engineers of the Road,
The Head Engineer,
The Board of Directors,
The Agent in Dresden, and
The Managing Director.
2. The Guards are divided into—

The Superintendent of the luggage for the passenger train,
 " " " luggage-train,
1st Class Guards,
2nd Ditto.
3. Advancement from a lower to a higher class, depends on civility towards the public, obedience, industry, attention, watchfulness, skilfulness and fidelity.
4. The superintendent of luggage for the passengers train, must leave 12 groschen out of his weekly wages, and the superintendent of luggage for the luggage-train must leave 8-groschens out of his weekly wages, in the hands of the Company, which money will be considered as capital at the end of the year, and he will receive 4 per cent. interest on it.

5. This deposit is the property of the superintendent of luggage, and will be delivered to him on his demand, if he leave the service of the Company.

6. Besides the general responsibility which falls on him for losses brought on the Company by his evident negligence, he must make them good out of his deposit fund.

7. Smoking is strictly prohibited, and will each time be punished by a fine of 8 groschens. Drunkenness is punished by instant dismissal.

8. The hours of work by day or night, are settled by the conductor or immediate superintendent.

9. The guard may not leave his post or the work appointed to him, without leave from his superintendent, or his representative.

10. He is bound in the service of the Company to perform work not belonging particularly to his department, if desired by the superintendent.

11. The guard has constantly to watch over all the carriages, and to remark if any injuries are apparent, and to give notice of them as soon as possible to the conductor, or in his absence, to the superintendent of the carriages at the next station.

12. He must be attentive to mark the signals of the engine-driver, conductor and guard on the tender, and punctually to act on them, as for instance with regard to the break.

13. He must thoroughly learn these signals as well as those which he has to give to the engineer, to the conductor, or to the plate-layer, and all the general signals; and he must always carry with him the signal-book, signal-lantern and flag, as well as these instructions, under a penalty of 8 groschens for each case of neglect.

14. The clothes, of which he is allowed one suit per annum, he must keep in good order, and if he leave the service before that time, he must give them back.

15. He must take proper care of the implements specified in the Appendix of these Instructions; of the signal-lantern and flag under his charge, and see that they be always in good repair, giving immediate notice when they are out of repair.

16. All property found in the carriages or elsewhere must, on the arrival of the train, be immediately consigned to the chief-office in Leipzig. Every neglect of the same will, on discovery, be punished with instant dismissal.

Appendix.

XI.

Leipzig & Dresden.

No. 2.

Special Directions
to the Guards.

II.—Duties of the First and Second Class Guards attached to the Passenger Trains.

17. Each guard is bound thoroughly to inspect the carriages to which he is attached; to take care that no wet enters and injures the cushions; that they be perfectly clean; that the axletrees be properly greased, &c.; especially he must take care before the starting of the train, to see that the break under his charge be in thorough repair and properly greased. He must give immediate notice of all damages which he may discover.

18. On the setting-off of the passengers, or during the journey to the next station, the guard must examine all the tickets, assure himself of the proper numbers, and then tear off the coupon.

19. He has to assign to the passengers their proper places, and to place together, as far as possible, those who are going to the same station.

20. He must take care that the places engaged are not taken by those who have no right to them, but that they be kept for those who hold tickets for them.

21. As much as it is possible with civility and without force, he must try that the coupés of the second class carriages are opened by degrees, so that to the last the passengers may be placed together. But no passengers may be favoured or places kept.

22. It is not permitted to take children who can walk alone, without tickets. In the occupied coupés, if the occupants do not object, several children may be taken above the number. Children under 10 years of age, may be taken in the first and second class carriages with third class tickets, under the express condition, however, that if all the places in the carriage are taken, those to whom they belong shall place them before them, or take them in their laps.

23. The guard is not allowed to take with him, or to take back drunken persons, or any persons who through improper conduct make themselves troublesome to the passengers. Also he may not take sick persons without the express directions of the conductor, to whom he must always give notice of any extraordinary occurrence.

24. Dogs must on no account be admitted into the carriages, but separate tickets must be taken for them, and they must be put in the place assigned to them.

25. Packages which are so large that the passenger cannot take them with him, without incommoding his fellow-passengers, or which appear to weigh more than 40 lbs., must be put in the luggage van. If any doubt as to the weight exists, he must give notice thereof to the conductor.

26. He is forbidden to provide or exchange tickets, and he must refer those who require him to do so to the office.

27. Before starting, the guard must take care that all the doors are securely shut.

28. During the journey, he must take care that passengers do not lean out of window, particularly on the bridges or barriers; in the tunnels, or while passing another train; as well as to prevent any irregularity which might produce an accident. Smoking must also be forbidden in the first class carriages.

29. The guard placed on the tender has the special instructions of the conductor, always to watch the train with great attention; he must more especially watch the signals of the guards and conductor, and immediately inform the engine-driver of them.

Duties of the 1st
and 2nd Class
Guards attached to
the Passenger
Trains.

Appendix.
 XI.
 Leipsic & Dresden.

No. 2.
 Special
 Directions
 to the
 Guards.

30. On the arrival at a station he must call out the name, and see that those passengers alight who are booked for the station, and that those only continue the journey who have the required tickets.

31. The guard is not only obliged to examine the carriages allotted to his care, but all the carriages in the train.

Should he find passengers with false tickets, or without tickets, he must give immediate notice to the conductor, not allowing the defrauders to escape.

32. Should the controller find that passengers have travelled without tickets, or have used old tickets, the guard through whose negligence it has happened will be fined; or if it appears that he has been privy to it, he will be dismissed the service.

33. The passengers dismounting from the train are to be civilly, but firmly, desired to remain at a sufficient distance from the railroad, in order that accidents may be avoided.

Duties of the
 Superintendents of
 Luggage attached
 to the
 Passenger-trains.

III.—*Duties of the Superintendents of Luggage attached to the Passenger Trains.*

34. The superintendent of luggage has to receive the passenger's luggage and the freight for the fast train from the appointed officer, and to deliver it to him.

35. On receiving any unguaranteed packages, he must, according to the Regulations, examine them, and see that all are marked with the name of a station, and with the weight; and he must send back for correction any packages which are not thus marked.

36. He must so arrange the packages that they be quickly delivered at each station.

37. Freight for the fast train must be entered into the way-bill, and must be taken into the charge of the superintendent on their being thus entered.

38. He must take into his keeping guaranteed packages, entering them particularly as such in the way-bill: he must put them in a locked place, deliver them as specified in the way-bill, and receive a receipt from the station where he delivers them.

39. For each article of such goods the superintendent of luggage is answerable (see No. 6); and he must take care that they be not only safely delivered, but that they, and all other packages, be protected from all injuries; it is, therefore, his duty to give prompt notice of any defects in the luggage-vans.

40. Should the post-guard charge him with any post-bags which the former cannot stow away, he must give a receipt for them, and only return them on receiving back the receipt.

Duties of the
 Superintendents of
 Luggage attached
 to the
 Luggage-trains.

IV.—*Duties of the Superintendents of Luggage attached to the Luggage Trains.*

41. As the functions of a superintendent of luggage attached to a luggage-train are similar to those of a conductor, he has to take care in every respect of the regulation and safety of the train entrusted to him; and all charge and packing of the goods, conducting of the train, ordering of the guards, packers, &c., is under his management from starting to the end of the journey; he has to arrange and inspect them; he is also responsible for any misconduct which he has not immediately removed, reprovved, or given notice of for punishment.

The engine-driver must follow his directions in every respect as to the starting, stoppages, and speed, &c.

42. The engineers and superintendents of the intermediate stations must give him, whenever he may require it, all possible assistance, and furnish him with what he may need on his responsibility. The inspector of the plate-layers, and plate-layers, must also, in any case which may arise, render him all practicable assistance.

43. The superintendent of luggage must receive the goods to be laden after the signing of the station-tickets and bills of lading; he must take care that they are in every way protected from injury, and that they be quickly unloaded at the stations. He must not leave the train until it has reached its fixed destination.

44. Goods, on which the name of the station to which they are to be taken is not marked, or such as are badly packed or protected, casks which leak, &c., must not be received by the superintendent.

45. The superintendent of luggage must strictly inspect if there be any leaded (*plombé*) goods, or any which are accompanied by bills; and he must take the greatest care in such cases that the leading be not injured, or the bills lost; as such neglect might have serious consequences.

46. At the loading of the vans he must take special care that they be not overloaded, particularly with raw produce, stones, wood, &c. If the van be so much loaded that there remains less than an inch of room between the springs and the frame of the van, the overweight must be removed. He must also take care that the weight be equally divided, and may not press more on one axle than another.

47. Before the starting of the train, he must assure himself that the carriages generally, especially the breaks, are in good order, and that everything necessary for the train, as covers, windlasses, cords, reserve-chains, lanterns, &c., are at hand; and he must give notice for punishment of any deficiency or negligence in this respect.

48. On arriving at the intermediate stations, he must deliver the goods and papers, as contained in the way-bill, to the appointed officers, receiving a certificate of their delivery; he must enter into the way-bill the goods which are ready for him to take, and take care that they be properly loaded.

49. At each station he must see that the superintendent of the carriages examine if the axles and wheels, grease-boxes, chains, &c., are in good order.

50. He must take care that the luggage-train does not go faster than a league in 20 minutes, and that this general precaution be more especially enforced on the inclined planes.

51. During the journey he must strictly watch that the engine-driver, guards, and plate-layers, observe and give the signals as in the directions.

52. When he arrives at the terminus he must deliver the goods as entered into the way-bill; he will have a receipt given for them, which he must receive again on delivering them.

53. If there be carriages for passengers joined to the train, he must observe the instructions from No. 18 to No. 33; taking those who have tickets from the stations, and seeing that the guards, under his control, follow the Regulations.

54. The carriages containing passengers must always be placed at the end of the luggage-train.

55. The superintendent must give the tickets, as in the Regulations, to those persons who get up at the stopping-places; for which purpose he will have tickets furnished to him at the chief office; which tickets he must redeem with ready money.

56. If he convey packages not on his list, or persons without tickets, he will have to make good the amount, and will be instantly dismissed.

57. The superintendent of luggage must keep an exact journal of each journey, according to the prescribed plan, and send it, at the termination of each journey, to the chief office.

58. For each journey which the superintendent has so conducted, that in no way any fault could be imputed to him, he will receive, above his wages, a fee of $\frac{1}{2}$ groschen for each mile (German) which the train has run: this fee will, however, be forfeited, if the bill of way show that he has made any mistake in the taking up or delivering of goods, or if any mischance has happened, or if the train be unusually delayed.

59. If any of those placed under him, in the train which he conducts, should be guilty of negligence or remissness, he must immediately give notice, in order that they be examined and punished.

The number of the guard—his name—birth-place—place of abode.

Implements which he must use.

1 signal-whistle.	1 brush.
1 signal-flag.	1 sponge.
1 signal-lantern.	1 carriage-key.
1 hair-broom.	

Clothes of the Service.

1 coat.
1 pair of trousers.
1 cap, with his number.

For a year from

No. 3.

SPECIAL INSTRUCTIONS TO THE ENGINE DRIVERS.

1. Those placed in command over the engine-driver are—

The engineer, and if he be absent, the foreman of the engine-house.

The conductor during the journey, and the superintendent of the luggage trains.

The managing director, or the agent at Dresden.

The Board of Directors.

2. The engine-driver must always, in accordance with his stipulated duties, perform without hesitation the services commanded him by the engineer or the authorized foreman. He must, on no pretence, leave the place where he is employed, without permission of his superiors; and besides his usual hours of labour, he must be ready for any extraordinary service which his superiors may require.

3. The engine-driver must carefully examine, before beginning a journey, that all portions of the engine confided to him are clean, safely fixed, and above all in good condition; that the tender is sufficiently supplied with coal and water, and that the extra connecting rods, wheels, &c. required, and the necessary tools, pulleys, &c. according to the list subjoined to these instructions, are at hand.

4. He must take care that the fuel, oil, &c. be used properly and economically, and that none of them be wasted.

5. He must immediately inform the engineer, or the nearest foreman, of any defect discovered before, during, or after a journey, in order that it may be supplied. He will be punished every time he omits to give such information, by a fine of one thaler, to go to the assistance fund.

Appendix.

XI.

Leipsic & Dresden.

No. 2.
Special
Directions
to the
Guards.

No. 3.
Special
Instructions
to the Engine-
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No. 3.
 Special
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 to the
 Engine-drivers.

6. He must assist in repairing as far as he is able.

7. During the journey he must *stand* upon the engine, and look continually at the road, not only before him, but also frequently behind him at the train, in order that he may perceive in time the signals of the plate-layers and of the guard on the tender; for which purpose he must make himself thoroughly acquainted with the contents of the signal-book subjoined to these Instructions. He must instruct the fireman under him, always to look at both sides of the train during the journey, when he is not occupied in stoking or otherwise, in order that any irregularities, or signals may be sooner perceived. This is more especially requisite on starting from a station. Every time the engine-driver disregards the signals, or neglects to give information of any irregularities he may perceive in the signals, of any negligence of the plate-layers, guards, or guard on the tender, or of any defects in the road, &c. he will be punished accordingly.

8. From the time of starting till the journey be ended, he may not quit the engine intrusted to him, leaving it neither with an apprentice or fireman. During the time that a locomotive engine has its steam up, whether it be standing still or in motion, the engine-driver must take care that the safety valves are in good order; and on that account if any accessible valve do not play of itself, he must satisfy himself by lifting it now and then, that it has not become useless and dangerous from any injury.

9. The maximum speed of the engines, which is fixed at 10 minutes for every geographical mile, must not be exceeded. The engine-drivers are strictly forbidden to go faster than this; and besides the deduction of the money allowed per mile, they will be fined for such conduct.

10. The longest time that a passenger train must take on the journey between Dresden and Leipsic, is fixed at 4½ hours.

If the train is drawn by two engines, a quarter of an hour more is allowed. If the passenger trains are longer on the road, the money allowed per mile is deducted, whatever may have been the cause of delay.

11. The engine-driver is strictly forbidden to take any one with him upon the engine or tender, besides the necessary persons to attend on the engine, without express permission from his superiors.

12. The engine-driver must never leave the engine over which he has the charge, on the road, or at the stations, without somebody to look after it.

13. If another train should be in advance of him, the engine-driver must always keep his train at least 1,000 (German) yards behind it, and must immediately slacken his speed, or stop if the train in advance should do so, or if he should receive a signal from it to put on the break; and in case the other train should stand in need of assistance, he must immediately drive carefully to it.

14. If any accident should befall his own engine or train, which requires the assistance of the train in advance of him, he must immediately tell the guard on the tender to give the other train a signal for stopping, and at the same time by whistling without ceasing, endeavour to draw its attention.

15. In such a case it is likewise most necessary, if a train should be behind him, to instruct the guard on the tender and the guard, to give it immediately the signal for putting on the break, in order to prevent its coming too near and causing any accident.

16. All trains run upon the left side of the road. When the engine-driver perceives a train coming to meet him upon the right side, he must immediately give with his whistle, the signal for "*Attention*," and must examine his own and the other train with the greatest attention, in order to see that every thing is in proper order. But he must be particularly careful if the meeting take place before curves, under bridges, or on high embankments.

17. If, from any oversight, or from any extraordinary exigency, two trains should meet upon the same line, without the relative signals having been observed, both engine-drivers must stop as quickly as possible; and the one who is the nearest to a station or a switch must turn back.

18. The driver is bound to use most especial care, during darkness, or fog, in descending inclined planes, in passing curves and switches, and in going over turn-tables, and those points which are pointed out by the plate-layers, or particularly denoted by the engineers.

19. If, during darkness or fog, a train should be obliged to stop in an unusual place, a guard must be immediately sent back for at least 1,000 yards, in order to inform the plate-layers, that they may stop any train coming after the other, by the prescribed signals, and by every other means in their power; and that they may inform the conductor of any such train, of what has happened. Engine-drivers, conductors, and superintendents of luggage, are all answerable that this be attended to, and the plate-layers are bound to obey their instructions in such a case.

20. No engine is allowed to push carriages before it, but must always draw them on behind; except in unavoidable cases, or when it is required to aid another engine in mounting an acclivity, or when carriages have been left behind by another train. In the last case, they must be pushed slowly on before, to the nearest switch, when they must be attached to the others.

21. The engine-driver must make the apprentice placed under him by the engineer, thoroughly acquainted with the engine, and the duties required, and instruct him especially in the art of stoking and supplying of water, and show him how both can be made usefully to accord with the acclivities or declivities of the road. He must employ every means to make him an able, careful, and attentive driver. He must, however, under no condition, entrust the guidance of the engine to him alone, but must always be present, if he employ

the apprentice about the engine, till the latter has been at least a year in service, and after having been subjected to an examination by the engineer, in the presence of a member of the Board of Directors, or of the Managing Director, has been declared by the former to be a thoroughly able engine-driver. After the apprentice has undergone this examination, and has given proofs of the requisite skill, the engine-driver who has been placed over him as teacher, will receive a gratuity of 20 thalers; but till then he is answerable for any damage which the apprentice may have caused whilst in service, when left without proper surveillance.

22. Every engine-driver must carry a copy of these Instructions about him, under penalty of a fine of 8 groschens for every time that he is found without it. Whoever acts contrary to the regulations contained in it, must make good any damage caused thereby, and likewise, without regard as to whether any damage be caused or not, he must pay an adequate fine to the assistance fund for every offence. In case of repetition this fine may be increased, or if it be thought necessary, the transgressor may be punished by immediate dismissal. In the first instance the engineer fixes the punishment, in the second, the Board of Directors. No appeal can be made against the sentence of the latter, and the engine-driver must submit unconditionally to it. Therefore, that these Instructions may be proved to have been received, he promises to follow them most precisely, and to submit to the regulations they contain.

No. 4.

SPECIAL INSTRUCTIONS TO THE INSPECTORS OF THE PLATE-LAYERS.

1. The superiors of the Inspectors of the Platelayers are—

1. The road Engineer.
2. The head Engineer.
3. The Board of Directors and its authorised Agents.
The Agent in Dresden, and
The Managing Director.

2. The inspector is answerable for the good condition of the piece of road assigned to him by the road engineer, and for the management of the police placed on it. He must conform to the general regulations, and to the special commands and instructions of the engineer; he is also answerable for the proper occupation and conduct of the workmen under his charge.

3. On this account the engineer must assign to him a sufficient number of plate-layers, sub-plate-layers, and labourers. Should any accident happen which should make the assigned number too few, he must give immediate notice thereof to the road engineer, and receive and follow his orders.

If, however, danger could result from this delay, he is authorised, on his own responsibility, to take on the requisite number of extra workmen; he must, however, give immediate notice thereof to his superior, and, as far as possible, give him the responsibility.

As soon as the extra workmen become unnecessary, he must dismiss them, giving immediate notice thereof. All his notices are to be given to the road engineer, and in his absence, if the case be urgent, either to the chief office in Leipsic, or the agent at Dresden.

4. The inspector has always to keep himself informed most carefully of the condition of his portion of the road, and for this end he must daily walk over it, in order to examine the state of the road, and to watch and control the necessary works, as well as the workmen. In order to perform these duties properly, his dwelling must be fixed as much as possible in a central position; he must never leave it at night without the knowledge of the engineer, and must never be absent from the part of road confided to his care, without a written permission from the engineer.

He must give notice beforehand to the engineer if he intend to change his residence.

5. The inspector has, besides apportioning to each of the plate-layers under him a division of his piece of road, and seeing that they properly perform their duties of keeping the road and every thing appertaining to it in good order; to see that the sub-plate-layers and labourers have theirs assigned to them and perform them. He must see that the instructions which he gives to his subordinates, and with which he must make himself thoroughly acquainted, are strictly obeyed. He must thoroughly examine the work of all of them every day.

6. In the duties of the inspector of the plate-layers, concerning the state of the roads and their appurtenances, are comprised the care of the works and of the rails; also he must see that the levels, the embankments, the causeways, the drains, the bridges, the sluices, the sleepers, the rails, the chair-plates, and connecting plate, wedges and nails, and their fastenings, switches and turn-tables, &c., are in proper order on the portion of the road under his charge. He must, besides, see the watch and waiting-houses, the number-post, and mile-stones, plantations, barriers, level crossings, draining cuts, &c., may be left in good condition.

7. The inspector has especially to see that all which might hinder the free and safe passage on the road be instantly removed. And for this end, to let no efforts be spared at any time, by day or by night, especially concerning the removing the snow. In case

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Leipsic & Dresden.

No. 3.
Special
Instructions
to the
Engine-Drivers.

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 Plate-layers.

any accident or interruptions should happen to a train on the road, he must immediately be with it, by day or by night, and with his workmen render the most effective help, and act under the orders of the conductor.

8. He must undertake the accustomed repairs according to the directions of the road engineers, without delay, and in the proper manner. If greater repairs however should seem to him necessary, he must give notice of the same, and receive further orders. If danger might result from the delay, he is bound and entitled to order and undertake such repairs as he may deem necessary; he must however give prompt notice thereof to the engineer.

He must suggest to the engineer the best manner of repairing the damages and losses as they occur, as well as by his attention to avert in time those which are to be feared.

9. The engineer must specify to him what land and other property belong to the Company, and he must mind that his subordinates guard the same that it be not injured or alienated, but that it be used and protected in a proper manner; he must also make himself acquainted with the fixed limits and joinings of the adjacent parts, and take care that they be traced.

10. The inspector must also watch that the working-tools, implements, and materials, for the keeping in good order and improving the road be properly used and preserved, that any worn-out or defective articles of this description be replaced or repaired; he must give notice in time when he is in need of anything, and to take care that those articles not in use are delivered up.

11. He must make a correct list of the exchange or supply of sleepers, rails, chair, and connecting-plates, wedges or nails, switches, turn-tables, &c., employed in the surface work of his portion of the road; on the exchange or repairing of any of these articles, he must likewise give notice of any deficiencies which he may note. In his weekly report he must give special notice of any alterations which arise.

12. The inspector is bound to insist that the regulations laid down by the Government with respect to the conduct of the police be strictly followed, and to give prompt notice of any insubordination.

Especially he must make himself thoroughly acquainted with the prescribed signals, and see that the plate-layers and sub-plate-layers are practised in them, and that they in all cases which may arise attend to them and repeat them, and that the necessary implements are kept in proper condition. Should any circumstance render it impossible to give the signal in the usual manner, he must provide as well as it be possible that the information may be given in some other way, as for example, through messages passed from one plate-layer to another, or in important cases through a messenger on horseback, that no time may be lost.

13. The inspector must make the list of the plate-layers and sub-plate-layers on night service, and inform the road engineer weekly of the names of those on duty. He must visit the night-patrols as often as possible, and certify that they have been at their post or otherwise in his journal.

14. He must also enter into his journal, all the occurrences of any kind which take place on the piece of road under his care, the receipts, giving up or supply of materials, the repairs and changes which take place, the number of labourers in employ, their time of working and their behaviour, the injuries to the road or anything belonging to it, and any accidents which may have happened, &c.

He must immediately enter the necessary notices into his journal, and always keep it ready for examination.

He must lay it before the road or head-engineer, and be able to certify to its contents.

15. Weekly or as often as it may be prescribed, the inspector of plate-layers must give to the road engineer, the list of wages of the workmen employed on his piece of road, as well as a written or verbal report of the completed or uncompleted works, as well as of all the weekly occurrences for which his journal will serve him as a guide. In regard to the working of the estimates and the like, he must assist the road engineer to the best of his power, by giving him the needful information, &c., and aid him with his suggestions with respect to the repairs, &c.

16. Should any urgent cause render a deviation from the general directions and regulations necessary, it must only be made provisionally, and instant notice thereof must be given to the road engineer.

17. Since the inspector of the plate-layers is answerable for the safety and order of his portion of the road, he is at liberty to punish the least negligence or omission of duty on the part of the sub-plate-layers and labourers, by keeping back some of their wages to the amount of a day's wages, giving notice to the road engineer as soon as possible that he may punish them. Those thus fined may appeal to the road engineer.

For gross offences he may suspend the offenders from the service for a while, giving instant notice to the road engineer that he may examine and punish them; this notice must always be given in cases respecting the plate-layers. The inspector may however suspend them in the meanwhile if any mischief could ensue from delay.

No. 5.

SPECIAL INSTRUCTIONS TO THE PLATE-LAYERS.

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No. 5.
Special
Instructions
to the
Plate-layers.

1. *Superiors in command.*—Those placed in command over the plate-layer, are—

1. The inspector of plate-layers.
2. The chief inspector.
3. The engineer of his division and the engineer's assistant.
4. The head engineer, and
5. The Board of Directors and the Managing Director.

2. *Subordination.*—The plate-layer must pay implicit obedience to his superiors in matters relating to his duties.

3. *General conduct.*—He must always be sober and well-behaved, must act with civility towards every one, and must fulfil his duties with industry, fidelity, and zeal.

4. *Acquaintance with the instructions.*—He must make himself thoroughly acquainted with these instructions and with any supplements there may be to them, and must always have them about him during the time he is employed, under penalty of a fine of four groschens.

5. *General duties of the plate-layers.*—It is the general duty of the plate-layers, as inspector of the road, to inspect thoroughly the piece of road committed to his charge, to watch it, and to take care that it is always in good condition.

6. *Continuation.*—The plate-layer must perform the duties required here, according to the orders of his superiors; but in case he should not be able to accomplish them without assistance, he must send immediate notice to his superiors, and propose the employment of the necessary workmen.

These notices must be sent to the superior nearest at hand, through the nearest plate-layer, who must forward them with the greatest possible speed in the same manner. If the plate-layer should be placed upon a piece of road which is still under construction, and is not yet traversed by steam-engines, he must nevertheless obey the following rules, as far as they are applicable, and must besides aid in the performance of all the labours which may be imposed upon him by his superiors.

7. *Clothing.*—The plate-layer who has received clothing must keep clean and save the clothes, which are specified in the particular instructions contained at the end of these, together with the time they are to be kept; but if he should leave the service before the expiration of the time, he must give back the yet unearned clothes, in an entire and clean condition.

8. *Tools.*—The plate-layer must keep the tools entrusted to him in good condition, and must inform the chief plate-layer immediately if any injury should happen to them.

9. *Superintendence of the materials of construction.*—The plate-layer must watch over all the materials placed upon the piece of road under his charge, and must see that they are not employed contrary to orders.

10. *Hours of labour.*—The hours of labour for the day and night, will be fixed by the superiors of the plate-layer, according as the service may require; and the plate-layer must present himself without fail to the nearest superior before he begins to work, and when he leaves the road.

During these hours of labour the plate-layer must not leave the piece of road, without special orders from his superiors, especially during rainy weather, as a careful inspection may be of great service in such times, to guard against the increase of injuries.

11. *Superintendence of the works.*—The inspection of the road confided to the plate-layer, has the works upon the road more particularly in view.

In regard to these he must carefully examine throughout the piece of road under his care.

1. The planes, the embankments, and the drains.
2. The bridges, sluices, level crossings, and the watch-houses and sheds.
3. The condition of the boundary posts, of the levelling and number posts, and of the barriers and signal posts.

He must repair immediately, to the best of his power, those slight injuries in the causeways and embankments which are caused by the pouring down of water in rainy weather, clear the drains of earth, stones and rubbish; during a thaw he must throw the snow out of the drains, upon the sides of the fields, and must endeavour to prevent any possible obstructions to the running off of the water.

12. *Superintendence of the surface works.*—Touching the surface works of the road, the plate-layer must look after—

1. The condition and the situation of the wooden sleepers, that they do not spring, are not rotten, and have not changed their relative positions.
2. The proper situation and condition of the rails, and he must take particular care that they are not bent, or turned up at the points, and that the nails, screws and wedges are fast. This examination of the rails must be repeated every time that a train passes by.
3. But it is especially incumbent upon the plate-layer to keep the rails and the tracks of the level crossings free from stones, gravel, mud, and water; and where trains are liable to pass, to take particular care that no wood, tools, or any other object lie on the rail, or upon and near the line.

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 XI.
 Leipzig & Dresden.

No. 5.
 Special
 Instructions
 to the
 Plate-layers.

13. *Level crossings.*—If a level crossing should occur upon the piece of road intrusted to the plate-layer, the latter must provide for—

1. The opening and shutting of the barriers, and he must take special care that it takes place in accordance with the particular rules given to him, not sooner, nor later.

He must give directions to those who pass the crossing with horses and vehicles, or with cattle, and must warn them especially not to loiter on the crossing; and when the barriers are shut, to await at a safe distance the passing of the train, that the cattle may not be frightened, and that no injury may happen to them.

14. *Switches.*—The plate-layer who has a switch to manage upon his piece of road, is more especially bound to attend to his duty, as a false position of the switch may place the train in the greatest danger.

1. He must provide for the fitness for use, the proper direction, and the greasing of the machine, and
2. He must take care that whenever a train passes, the moveable portion of the line is exactly in its proper position.

The least negligence in this important duty, will be followed with immediate dismissal, and he will likewise be punished by the existing criminal laws, in proportion to the injuries received.

15. *The passing of the train.*—The duty of the plate-layer requires at the passing of the train—

1. That the plate-layer must gain precise information at what hour of the day a train is likely to pass his piece of road.
2. At least a quarter of an hour before, the plate-layer must have finished examining and clearing the rails, and must proceed to the point where he, according to his special instructions, must await the passing of the train. If any labourers should be upon the road at this time, he must direct them not to remain on, or close by the line of road, and also to leave none of their materials, tools, or clothes lying in the way.
3. On the approach of the train, the plate-layer must give the requisite signals to the engineer, *viz.*—
 - (a) If the line of road under his care is in perfect order, the plate-layer must go to the brink of the trench, with his face turned to the line, and present the flag, stretching out his arm with it in the direction of the approaching train.
 - (b) But if any circumstance has happened upon his piece of road which makes a slow passage necessary, the plate-layer must stand in the middle of the road and wave the flag over his head.
 - (c) But if any damage is done to the road, or any obstacle which cannot be removed should render the passing of a portion of the line dangerous or impossible, the plate-layer must stand in like manner in the middle of the road, and wave the flag round in circles from head to foot.

The remaining signals are given in a separate Appendix.

If the engineer should pay no attention to these signals, the plate-layer must give information of it to his superiors as soon as possible.

4. During the passing of the train the plate-layer must observe the effects it produces on the line; he must therefore look at the rails and sleepers, and not at the carriages.
5. The trains are not allowed to halt on level crossings. If such a case occur, the plate-layer must inform the engineer and conductor of it; but if they act in opposition to these orders, he must inform his superiors of it.
6. If a train, from any unforeseen circumstance, should be obliged to halt during the journey at a place at which they do not usually stop, as a general rule, no getting in or out of the passengers is to be allowed; but if the conductor should allow it, or if the train stop at a station, the getting out must always take place upon one side, and at the outside of the road.

16. *Guarding of the road.*—Touching the guarding of the road, the plate-layer must make himself thoroughly acquainted with the rules printed at the end of these instructions, and must see that they are enforced without regard of persons.

He must therefore more especially—

1. Ask those persons who come upon the railroad, and are not officers or workmen in the service of the Company, for their tickets of leave; and must take care that only one person is admitted with each ticket, and that upon the day marked upon it.

Only blue pasteboard tickets, signed by the managing director or the head engineer, pass current every day, and their holders are allowed to bring several persons on the road in their company.

2. The plate-layer must stop those who, by the said regulations, have made themselves subject to a fine; he must take a pledge from them for their re-appearance, and after he has informed himself of their names, he must conduct them off the road, *volens volens*, by the shortest way, although without treading on the embankments.

He must give information of every occurrence of this kind to the chief inspector, and deliver to him the pledges received, in order that he may give further notice to the proper court of justice.

3. Those who are guilty of open opposition to the plate-layer, or who have done an intentional injury to the road, and especially those transgressors of the police regulations of the railroad who are unknown to him, or do not reside in the vicinity, are to be arrested; and as soon as the duties of the plate-layer allow, to be brought

to the chief inspector, and are to be delivered up by him to the court of justice concerned, for investigation and punishment, in which service the plate-layers, if their other duties permit, must assist each other.

4. The pledges taken are to be given by the chief inspector to the court of justice, with a request for the investigation and punishment of the offence, as well as for the levying of a compensation for the damage done.

5. If the plate-layer cannot succeed in arresting, or in taking a pledge from any person injuring the road, he must give immediate information to the chief plate-layer of this occurrence.

6. Every plate-layer will be especially informed of the extent of the piece of road which he has to guard during the night, as well as of the order in which he will have to undertake this night service.

He is always commanded during night service by the chief plate-layer, who must enter the names of the watchmen, and the report of any events which may occur, in a book kept by the engineer at the station.

17. *Giving assistance.*—The plate-layers must, if necessary, give assistance to each other, and to the engineers, conductors, and guards, and also if they are acquainted with any reluctance to work among the labourers or others, it is their duty to give information of the same.

18. *Punishment of the plate-layers.*—Every neglect that a plate-layer shows to these, or to his particular instructions, according to the degree of danger and damage which is, or might have been caused to the passengers or company, will be punished with a fine, to be doubled or followed by immediate dismissal in case of repetition.

But in cases of gross negligence, breach of trust, or opposition to his superiors, this does not exclude the culprit from being informed against and delivered up to justice for the investigation and punishment of the offence.

The Board of Directors are also at liberty publicly to hang up in the work-rooms, the name of a plate-layer who has been punished, or dismissed the service for negligence.

1. Particular Instructions.

Name of the plate-layer.

Birth-place.

Place of residence.

2. Description of his piece of Road.

Division.

Section.

Number post.

Level crossing at

Switch at

3. Standing point at the passing of a Train.

4. Hours of Labour.

Day labour from A.M., till P.M.

The plate-layer has night service, according to his detachment, every third night on the piece of road from post to post

5. Tools.

The plate-layer has received the following tools.

- 1.
- 2.
- 3.

6. And the following Clothes.

One cap numbered
time of service.

for years

and besides for the

7. Weekly Wages.

thalers

gr.

pf.

current Prussian money.

No. 6.

INSTRUCTIONS FOR THE PORTERS.

1. Those placed in command over the porters, are—

The store-keepers.

The collectors in the carrying department.

The superintendents of luggage.

The chief inspector at the station.

The superintendent of the carriages.

Appendix.

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No. 5.

Special
Instructions
to the
Plate-layers.

Particular
Instructions:

No. 6.
Instructions
for the
Porters.

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—
No. 6.
Instructions
for the
Porters.

2. The porters must perform all work ordered them by their superiors, without hesitation or delay, and must always endeavour to be civil to all persons.
3. In unloading the goods, carriages, &c., which come by the railroad, or to the station, they must exercise the greatest care, and must immediately inform the superior concerned of every injury which they perceive before unloading; also,
In loading the different articles, they must handle them carefully, and see that the goods are well packed, and otherwise in proper condition, and they must load them so, that they cannot be injured on the journey, but in this respect they must pay especial obedience to the orders of the superintendent of luggage.
4. At the departure of the goods, &c., from the railroad to the town, every porter must take special care that the goods marked upon his ticket—
(a) Are delivered rightly according to the number of the packages.
(b) Are in a perfect condition, and
(c) That the lead and cards of packages, that are leaded (*plombé*) are uninjured, as each porter must watch over the goods once committed to his charge, and must make compensation for damage or loss.
- The delivery must be made quickly, and without favouritism, according to the order in which the goods are placed on the ticket, and immediate payment demanded from the receivers.
5. The porters are, upon the verbal or written orders of persons having goods to be conveyed, to fetch the goods from the town, &c., to the station. They must go without delay, and must take care that the wagons go by the shortest practicable road. When engaged in this duty the porters must see that the number of the packages delivered to them by each person, is inscribed in books marked with their numbers, and must take care that the goods are—
(a) Externally in good condition.
(b) Legibly directed, and
(c) Provided with proper bills of lading.
- They must keep carefully the bills of lading, receipts, or any other papers which are consigned to them, and they must deliver the latter with the goods to the several store-keepers.
- For security sake the porters are not allowed to leave the wagon during the transit, and must take especial care that while they are delivering the goods, the carman do not leave the wagon.
6. All loitering in the streets, but more especially entering beer or liquor-shops is entirely forbidden, and will be most severely punished by a deduction from the weekly wages, or by immediate dismissal if it should be thought necessary.
7. No gratuity can be demanded under any pretence.
8. The amount of the fees, which are properly fixed in the subjoined Appendix, for such goods as the consignees require to be brought *into* the house, *into* the warehouses, over steps, &c., as well as any present given voluntarily to any individual porter for his services, must be placed in a box, the contents of which are to be divided among the porters.
9. Refractory conduct to his superiors, or disregard of their orders, authorizes them to suspend a porter immediately from his employment, till further investigation be made.

EXTRACT, taken from the Published Regulations made by the Council of Leipsic, on the 24th December, 1840.

Table of Fees *Table of the Fees, for which the Porters must carry the Goods into the Warehouses of the*
for the *Consignees.*
Porters.

(a) If the packages have either been not weighed *at all*, or without any fee being demanded for it.

1. For dry goods, (including herrings):—

	Ngr.	Pf.
For several small packages together, which each weigh under one cwt. per ship-pound (330 lbs.)	2	0
For small packages, which each weigh about 1½ cwt. a-piece	0	6
For larger packages, which weigh up to 8 cwt. a-piece	1	3
For the same weighing from 9 to 15 cwt. a-piece	2	5
For packages weighing more than 15 cwt. 1 ngr. 3 pf. for every ship-pound above.		

2. For all wet goods, without distinction, with the exception of wine; also for fragile goods, such as earthenware, china, &c., glass, crucibles, musical instruments, and for everything which in the direction is recommended to be carefully handled, double the above fees may be demanded.

For wine, for the whole cask	20	0
„ for the half-cask	10	0

For smaller barrels, the fees fixed for the wet goods may be demanded.

No. 7.

SPECIAL INSTRUCTIONS FOR THE PORTERS.

PASSENGER TRAINS.

1. The superiors of the Porters are :—

The Inspector placed over them.
 The Inspector of the conveyance department.
 The Managing Director, and the Agent at Dresden.
 The Board of Directors.

2. Each porter must leave a deposit in the funds of the Company of 200 thalers, on which he will receive 4 per cent. per annum interest; and with which he will be answerable for the safety and good preservation of the luggage entrusted to him.

3. On entering the service he will be bound by the office for public safety, to follow these instructions, and from this office he will receive a number and badge, without which, he cannot be employed; he must, on no account, entrust them to any one else. He must also keep a copy of these Instructions.

4. He must implicitly follow the directions of his superiors, and must remain at or near the station-sheds at the appointed hour; and besides his immediate duties as a porter, he must perform, to the best of his ability, any work given to him; and every sixth night he must keep watch.

5. According to the orders of the superintendents, two porters must always go together to fetch the luggage of the travellers from their different residences in the towns, or to convey them to the same. On fetching the luggage from the town, they must take care to convey only those packages which are marked with the names of their possessors, and the station to which they are bound. The porter is allowed to take with him a number of station-tickets, which he must stick on to the packages.

6. The rate of payment fixed for the taking away, or bringing in of goods, is—

2 groschen for a trunk, a portmanteau, a chest, hamper, or any other such large package.

1 groschen for a carpet bag, hat-box, or any similar small packages.

The payment for the transport of larger goods must be fixed by the inspector.

7. The money must be received from the travellers in accordance with this tariff, and must immediately, or at least daily, be paid over to the superintendent, for which payment he will give a receipt, and enter it at the booking-office.

8. More than the fixed payment must, on no pretence, be demanded, each transgression of this rule will be severely punished.

9. Every porter who does not deliver the money exactly as he has received it, who demands more than the fixed rate of payment, or who is guilty of any kind of fraud, will, on the first offence, be punished by a fine of 10 thalers. On the repetition of the offence, he will be punished by a fine of 20 thalers, or if it be thought necessary, with instant dismissal.

10. Every negligence in the service, disobedience, incivility, drunkenness, &c., will be punished by a suitable fine, or if it be thought necessary, by instant dismissal.

11. All fines will fall into the porter's fund (*see* No. 13); they must be paid out of the surety deposited by the porter, who must, however, immediately make it up.

12. If the porter punctually perform his duties he will receive 3 thalers weekly wages.

13. Over and above this, the fourth part of the amount of the porters' fund must be taken out and divided among the porters and their superintendent, so that the superintendent may receive 2-14ths, and each of the twelve porters 1-14th of the amount.


14. The providing and keeping of trucks for the fetching or taking away of goods, will be paid for out of the gross receipts.


No. 8.


SIGNAL-BOOK.

SIGNALS OF THE PLATE-LAYERS.

A. Fixed Signals with the Signal-pole.

 1. *The train has started!*—One circular disc is hoisted. The signal is to be held out until the train has passed by, or until a new signal is to be given.

 2. *The train is not coming!*—Two circular discs are hoisted by each other; by night a lantern must be hung on each disc.
 The signal will remain hoisted until the next plate-layer has repeated it.

 3. *Help is wanted!*—Two circular discs are to be hoisted, one underneath the other; at night a lantern must be fastened on each disc.
 The signal is to remain up until the next plate-layer has repeated it.

Observe.—When this signal is given with side-arms (*seitenarm*) and flag, it is to be repeated in the direction from Dresden to Leipsic.

Appendix.

XI.

Leipsic & Dresden.

No. 7.
 Special
 Instructions
 for the
 Porters.
 Passenger Trains.

No. 8.
 Signal-Book.
 Signals
 of the
 Plate-layers.

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 Leipsic & Dresden.

No. 8.
 Signal-Book.
 Hand-Signals.

Without side-arms (seitenarm) and flag, it is to be repeated in the direction from Leipsic to Dresden.

B. Hand-Signals.

Which the plate-layer is to make with his flag, broom, pickaxe, spade, or other implements.

1. *All is in order!*—When the train approaches, wherever he may be placed, the plate-layer must extend his arms, with the flag or any of his tools, in the direction in which the train is coming.

At night a lantern with a red light must be fixed in the direction whence the train comes.

2. *Go slowly!*—The plate-layer must place himself between the lines with his face towards the coming train, and must wave his flag or any of his tools to and fro over his head.

At night, placing himself in the same manner, he must swing his lantern to and fro, to the right and to the left.

3. *Stop!*—The plate-layer placing himself between the lines with his face towards the train, must wave the flag or any of his tools, from his head to his feet in a circle.

At night he must wave the lantern in the same manner, in a circle.

Signals
 of the Conductors
 of the
 Passenger-Trains,
 and of the
 Superintendents
 of the
 Luggage-Trains.

SIGNALS OF THE CONDUCTORS OF THE PASSENGER-TRAINS, AND OF THE SUPERINTENDENTS OF THE LUGGAGE-TRAINS.

1. *Start!*—The blue flag must be raised high, when the engine-driver will give a loud whistle; he must not however start until the flag has been waved several times.

If the flag should be lowered without having been waved, the driver must wait until that sign is given.

2. *Go slowly!*—The blue flag will be in like manner waved to and fro, of which the guard on the tender must give instant notice to the engine-driver.

3. *Stop!*—The blue flag must be waved from above to below, in a circle, until the guard on the tender sees it; he must give instant notice to the engine-driver.

Each guard must at this signal put on the break under his care.

Signals of the
 Engine-Drivers.

SIGNALS OF THE ENGINE-DRIVERS.

1. *Attention!*—He must blow a single continued note with the steam-whistle.

2. *Starting!*—As soon as the conductor holds up the blue flag, he must blow a continued note with the whistle to warn everybody. The starting must only take place when the conductor has waved the flag to and fro. If the flag is withdrawn without this waving, he must wait until that sign is given.

3. *Put on the break!*—A long note, to which, at pleasure, three or one short whistle may follow. If the whistle should be out of order, the guard on the tender must give the signal to those on the break with a flag.

4. *Take off the break!*—Two short whistles with the steam-whistle.

5. *Arriving!*—On arriving at the station sheds, and sidings, he must give the signal, by blowing a long note on the whistle; he must go slowly and with great caution.

But especially must a partial movement of the train in the station sheds be made slowly and with the greatest caution.

Signals of the
 Guards.

SIGNALS OF THE GUARDS.

1. *Attention!*—If a guard should observe anything on the road of which the engine-driver should be informed, he must hold the flag high above the carriage, the guard on the tender must give the engine-driver information of this signal.

At night, this signal must be made by holding up the lantern on a pole.

2. *Go slowly!*—The flag must be raised and waved to and fro.

At night, this signal must be given by waving the lantern to and fro.

3. *Stop!*—If the guard observe any irregularity or injury which requires the stopping of the train, he must raise the flag high, and wave it from above to below in a circle.

At this signal each guard must put on the break.

4. *A train is following!*—From the tender, or one of the carriages, a flag must be hoisted in such manner that the plate-layer may observe it.

At night, this flag must be shown by a lantern.

Forms of
 Agreements

Forms of Agreements entered into between the Directors of the Company and persons engaged as Engine-Drivers' Apprentices, and as Engine Drivers.

The following AGREEMENT has been entered into, to date from the said day between the Board of Directors of the Leipsic and Dresden Railway Company and N. N.

The aforesaid Board of Directors accepts the above-mentioned N.N. from this day forward, as an engine-driver's apprentice in the service of the Leipsic and Dresden

Railway Company; and the said N. N. binds himself to pay implicit obedience to the orders and instructions of the engineer, and the engine-driver, under whom he is placed; and to make himself thoroughly acquainted with the duties and functions of an engine-driver.

The duration of the apprenticeship is fixed for at least a year, during which time N. N. will receive the wages agreed upon. At the expiration of this period, he must subject himself to an examination by the engineer, in the presence of a member of the Board of Directors, or of the Managing Director; and if he pass the examination well, and show himself to be theoretically and practically an able and safe engine-driver, he binds himself to enter into the subjoined contract, as the latter, and to fulfil the said contract, and in accordance with it, to serve the Company for five consecutive years.

If N. N. at the expiration of a year, be found at the examination to be incapable of acting as engine-driver, he must continue to serve as apprentice for the wages mentioned, till such time as he is declared capable to undertake the office of engine-driver. If, however, the engineer should find him incapable of learning the necessary duties of an engine-driver, the undersigned Directors are at liberty to dismiss him immediately, and are not obliged to make him any compensation whatever.

N. N. hereby renounces in the most binding manner, all subterfuges which may be opposed to this contract, and most especially that the Company, on their part, have not fulfilled the contract,—the act whereof having been executed on the part of each contracting party, has also been legally recognised by N. N.

Leipsic, the

The Board of Directors of the Leipsic and Railway Company,

N. N.

Chairman of the Board of Directors.

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Forms of
Agreement.

The following AGREEMENT has been entered into, to date from the said day, between the Board of Directors of the Leipsic and Dresden Railway Company and N. N.

1. The said Board of Directors accepts the above-mentioned N. N. from this day forward, as an engine-driver in the service of the Leipsic and Dresden Railway Company; and the said N. N. is bound, during the time he is in that service, to watch over the engine confided to his care in the most careful manner, and especially so to fulfil his duties as they are defined in the particular directions attached to this contract.

The duration of the service is fixed at a period of five years, from this day forward; but the Board of Directors always reserves to itself the right, during this time, of giving six months' warning. At the expiration of the five years, the contract is tacitly considered as continued, at the highest rate of wages given during the five years (*see* section 7), viz., nine thalers weekly, so long as six months' warning is not given by either of the parties.

2. If, however, N. N. should, in any manner whatever act contrary to this contract, and to the said instructions, both of which he has bound himself to obey according to the statute law of Leipsic, and therefore recognises them both as formal statutes, the Directors hold themselves at liberty immediately to dismiss him from the service, without being bound to give the stipulated warning; in which case, the said N. N. renounces all claim to any period of warning.

3. In case of gross negligence, culpable or even refractory conduct, the Board of Directors expressly reserves to itself the right of making a public declaration of the cause of dismissal.

4. The said N. N. shall be answerable for and must make good all damage sustained by the Company, or by persons making use of the railroad, which is caused incontestably by his carelessness, negligence, or misconduct. If the money placed in reserve as a security fund (mentioned in section 9) be not sufficient, all his remaining property must be answerable in order to compensate. But that no injustice may be done to him, in such a case each party shall name an umpire, who shall in concert choose an arbiter, and decide in that manner, whether the engine-driver be culpable or not. He will likewise be subject to the rules of the book of criminal law for the kingdom of Saxony, viz., the sections 180 and 182, for accidents caused by him, when human life is placed in danger, or has been lost, or injuries have been done to the passengers.

5. Whenever it is required of him, and at all times N. N. is bound to fulfil the duties of his station, to proceed wherever the interests of the Company require his presence, and even to transfer his place of residence, if necessary. In the last case an adequate compensation will be made to him for the expenses of removal.

6. Whether the labour incumbent upon N. N. be executed by day or by night, it has no influence upon the wages fixed in the following clause, as no particular recompense is granted for extra labour by day, or for such business as is necessary to be done by night. It makes, also, no difference if such labour be required on Sundays or holidays; but all work by night will be avoided as much as possible. In case the engine-driver is not required to accompany the train, his hours of labour in the engine-house are fixed at from 6 A. M. till 7 P. M.; but in case the engineer has no employment for him, he is at liberty to offer him special leave of absence.

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 Forms of
 Agreement.

7. He will receive the following wages from the Company for his services, through the Board of Directors, *viz.*—

	In the 1st year	7 thalers weekly.
„	2nd „	7½ „
„	3rd „	8 „
„	4th „	8½ „
„	5th „	9 „

which he will receive, upon giving a receipt, from the cashier, after certain sums have been deducted, in accordance with sections 8 and 9.

8. N. N. binds himself to contribute a certain part of his wages to the general fund, which affords assistance to all the officers of the Leipsic and Dresden Railway, and to this end he shall allow that sum to be deducted from his above-mentioned salary, which has been prescribed in section 3 of the Statutes of the Assistance Fund, which came in operation on the 1st of January, 1841; or which in future, according to the statutes, may be subject to an alteration, in return for which, in case an accident should befall him in the service of the Company; or if he should be ill, or even become quite unable to work, he will be enabled to claim support from the assistance fund, in accordance with its statutes.

9. Besides this contribution, N. N. shall allow a thaler weekly to be deducted from his salary, as a safety fund in reserve, in order to provide for the compensations mentioned in section 4.

These contributions are placed to his account every six months, an acknowledgment is given of it, and interest at the rate of 4 per cent. allowed, but they cease at the expiration of the first five years, as, for the following years, N. N. need only continue to pay from his fixed salary the contributions to the assistance fund mentioned in section 8.

10. N. N. may require the above-mentioned money, placed in reserve as a safety fund, to be paid to him on leaving the service, upon giving back the acknowledgments, after satisfying all the obligations which he has bound himself to fulfil in this contract.

11. And N. N. hereby renounces, in the most binding manner, all subterfuges which may be opposed to this contract, more particularly the non-fulfilment of the contract on the part of the Company, and likewise, the fair and market statutes, and the statute of limitation for bills,—the act whereof having been executed on the part of each contracting party, has been also legally recognised by N. N.

Leipsic, the

The Board of Directors of the Leipsic and Dresden
 Railway Company.

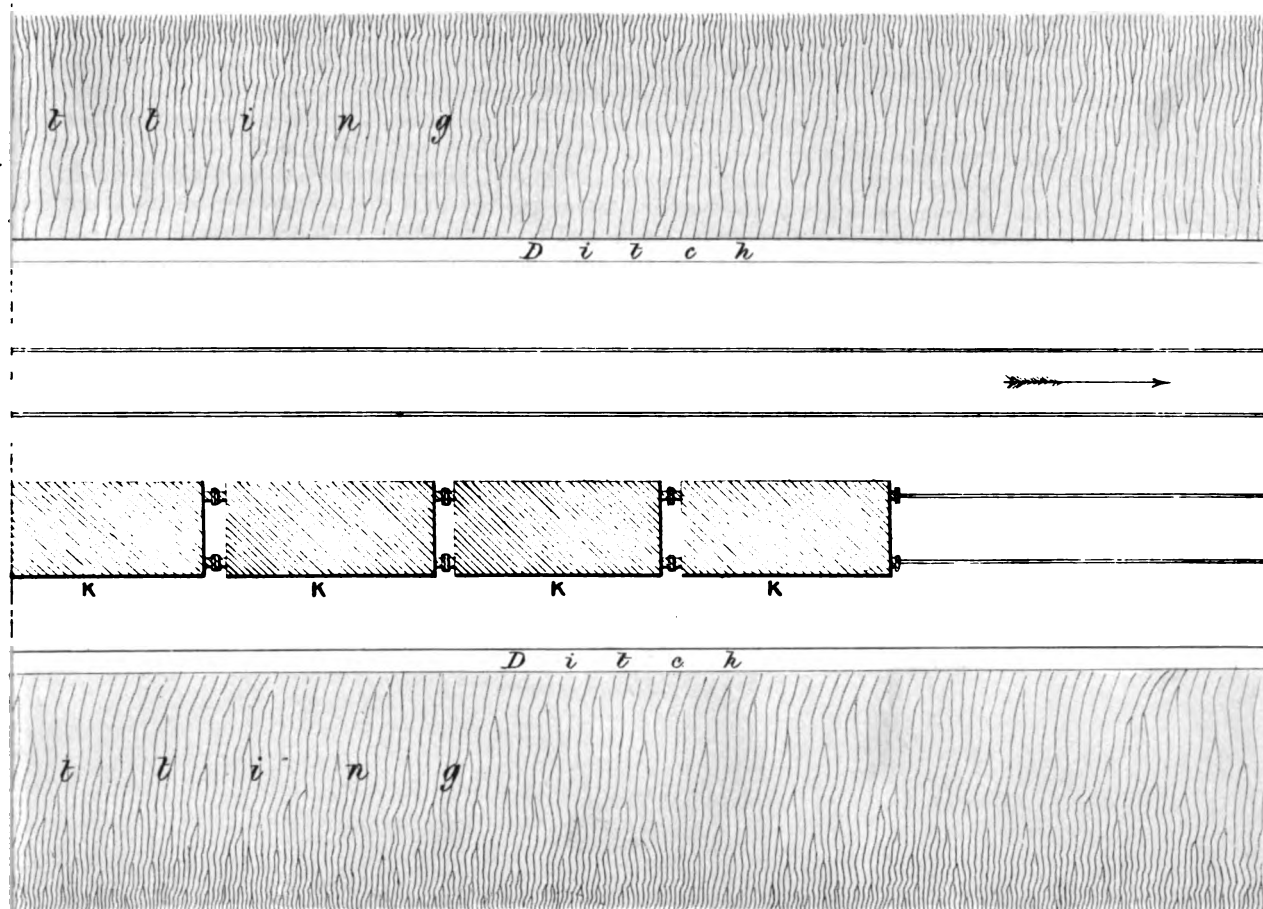
N. N.

Chairman of the Board of Directors.

Relating to Accidents

SHEFFIELD AND ROTHERHAM RAILWAY.

DRAWING, shewing the RELATIVE POSITION of the CARRIAGES,
Immediately after the ACCIDENT, of the 3rd June, 1841.



REFERENCE.

- G. A First Class, thrown on top of the Second Class Carriage.
- H. A Third Class Carriage, in which there were Seven Passengers.
- I, A loaded Waggon off the Rails.
- K.K. Loaded Waggon on the Rails.
- L. Tank of the Tender.

25 30 Feet

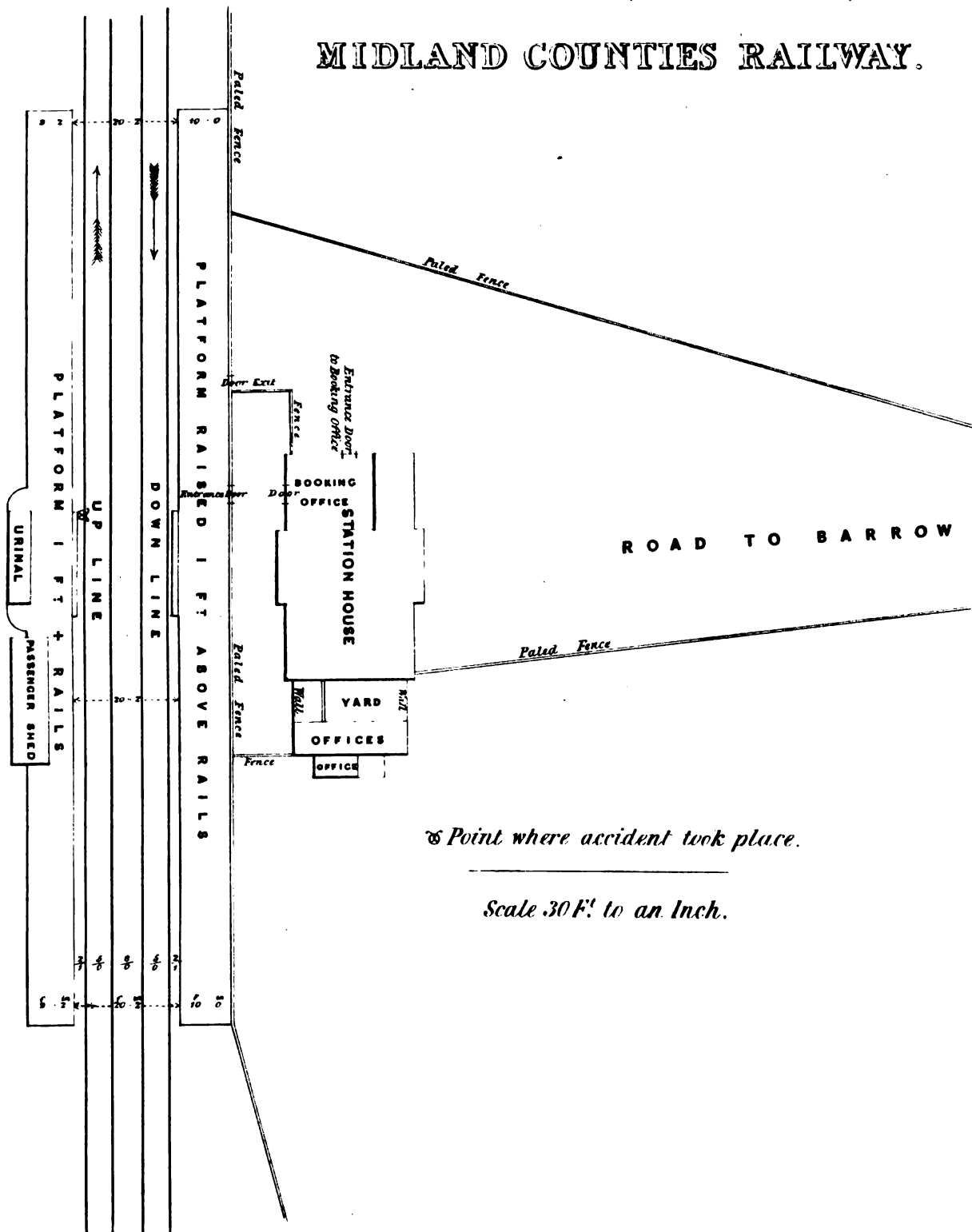
To accompany L^t Colonel Sir Frederic Smith's Report,
of the 16th June 1841.

Standidge & Co. Litho. London

N^o2.

Relating to accidents.

SKETCH of the BARROW STATION, MIDLAND COUNTIES RAILWAY.



✕ Point where accident took place.

Scale 30 F^t to an Inch.

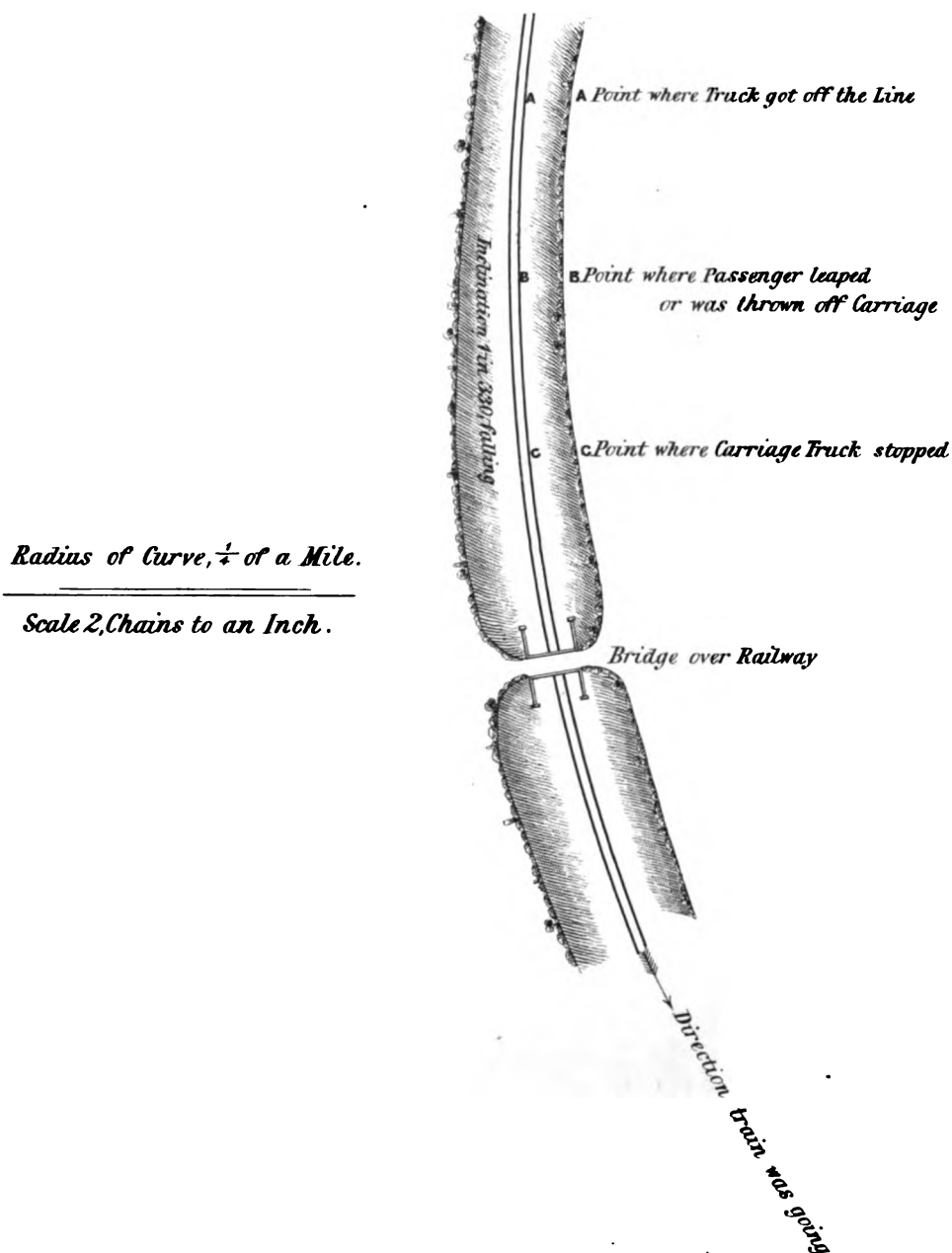
To accompany L^t Colonel Sir Frederic Smith's Report,
of the 26th June, 1841.

N^o 3.

Relating to accidents.

NEWCASTLE-UPON-TYNE & CARLISLE RAILWAY

PLAN shewing the **POSITION OF THE TRAIN** when the Truck ran off the Line,
on the 16th May, 1841.

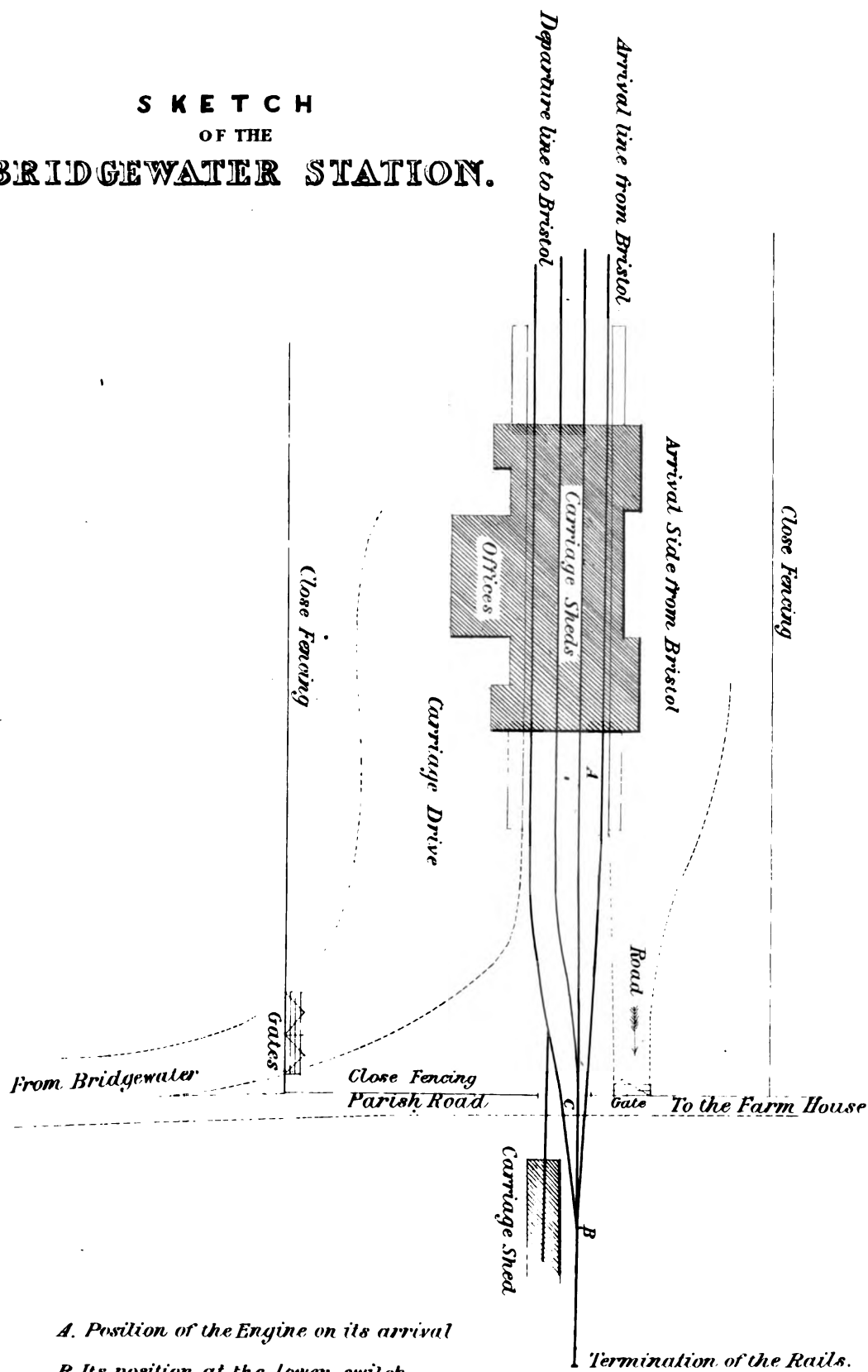


*To accompany L^t Colonel Sir Frederic Smith's Report,
of the 30th June, 1841.*

N^o 4.

Relating to Accidents.

S K E T C H
OF THE
BRIDGEWATER STATION.



- A. Position of the Engine on its arrival
- B. Its position at the lower switch
- C. The place of collision

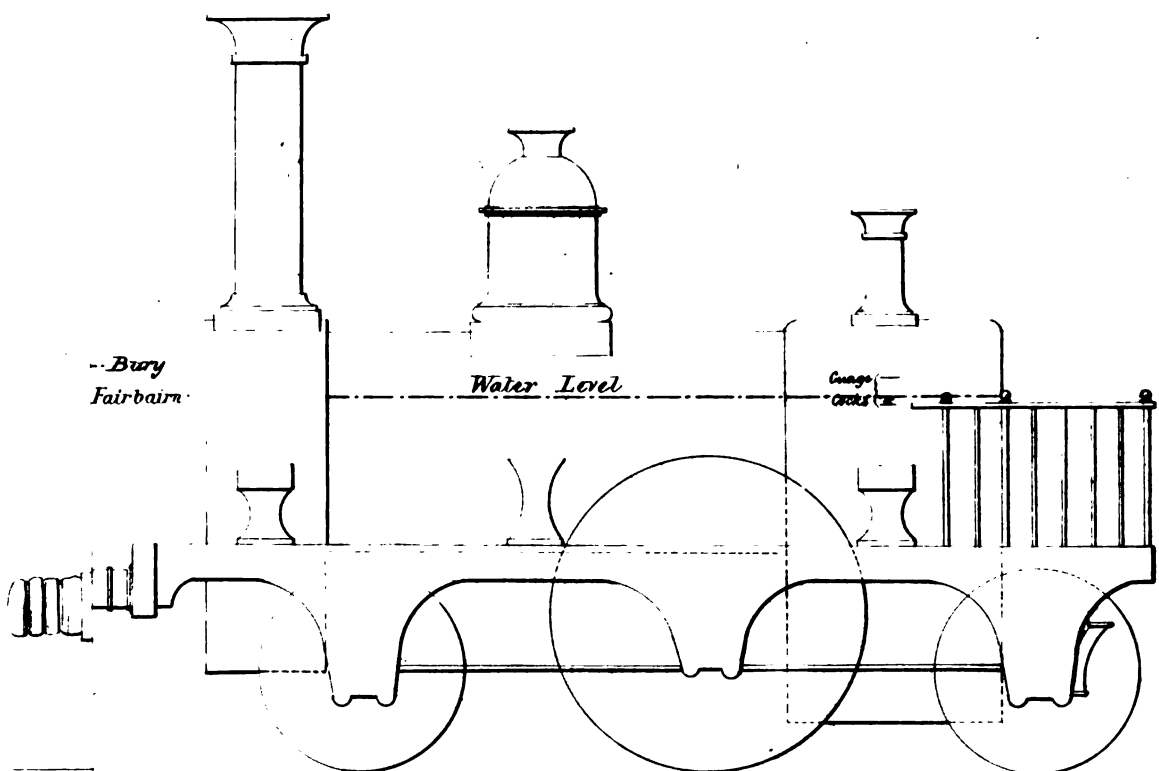
To accompany Professor Barlow's Report,
of the 20th Sept. 1841.

N^o 5.

Relating to Accidents.

N AND BRIGHTON RAILWAY.

**Showing the Relative Positions of BURY's & FAIRBAIRN's ENGINES.
on Saturday, 2nd Oct^r. 1841.**



15 Feet

*To accompany Professor Barlow's Report
of the 15th Oct^r. 1841.*

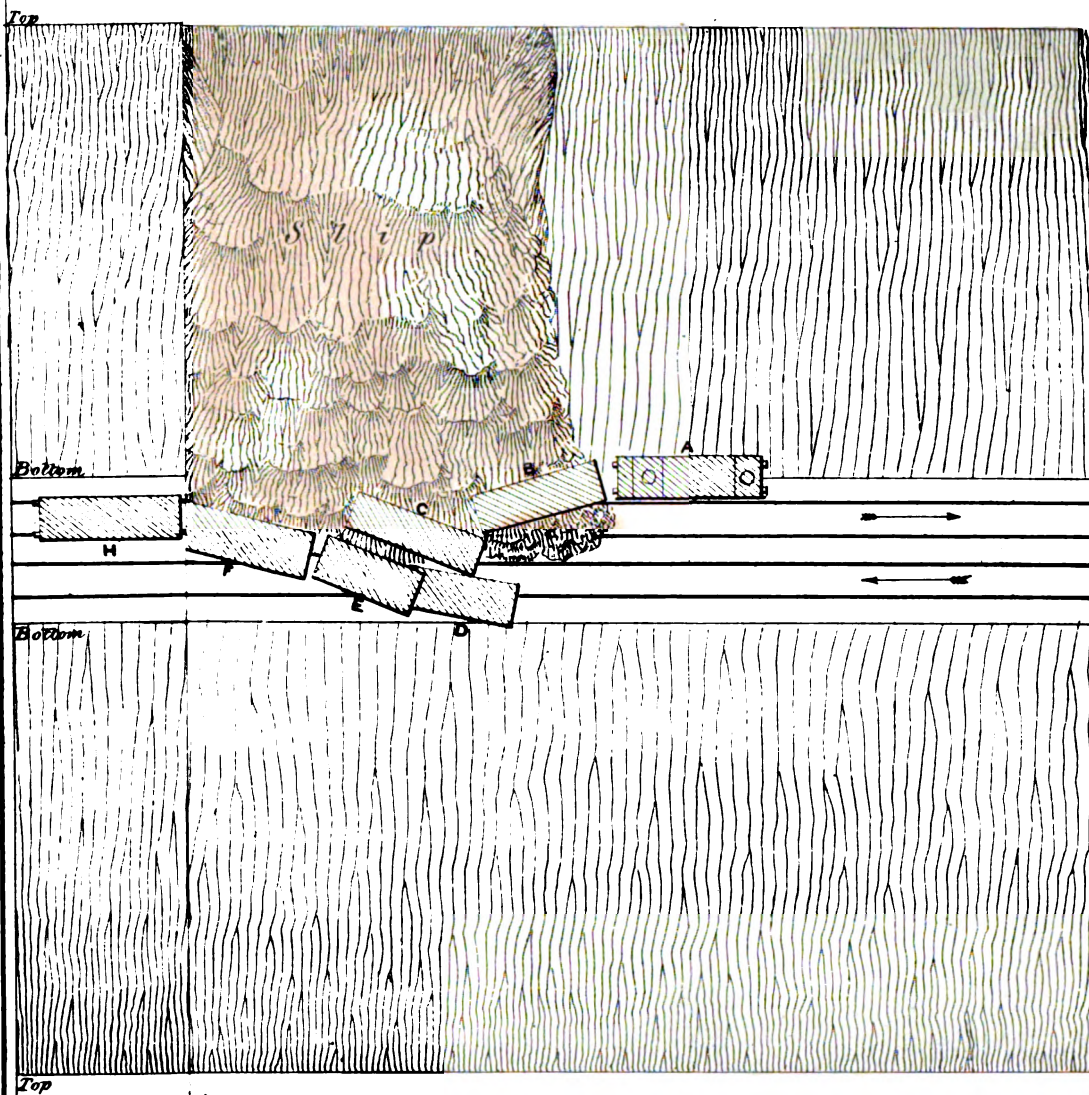
Stanbridge & Co. Litho London

N^o 6.

Relating to Accidents.

WESTERN RAILWAY.

POSITION of the CARRIAGES after the ACCIDENT,
morning of the 24th Dec^r 1841.



not off the Line

accompany L^t Colonel Sir Frederic Smith's Report,
of the 25th Dec^r 1841.

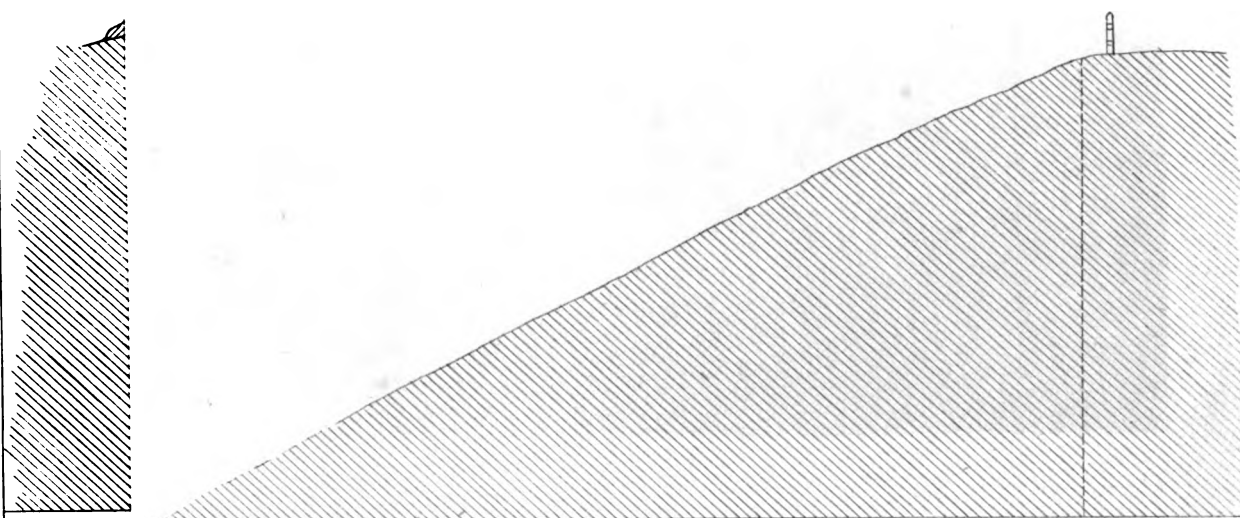
Standidge & Co. Litho London.

N^o 7.

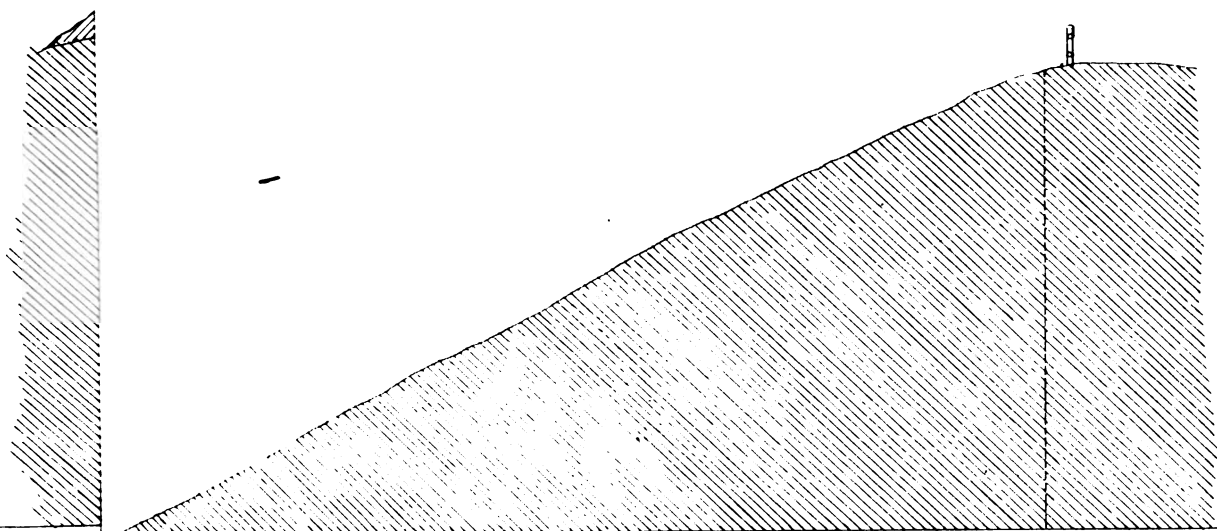
Relating to Accidents

GREAT WESTERN RAILWAY.

FORM of CUTTING, before the SLIP,
on the Morning of the 24th Dec^r 1841.



FORM of CUTTING, after the SLIP.



*To accompany L^t Colonel Sir Frederic Smith's Report
of the 25th Dec^r 1841.*

100 Feet.

Standidge & Co. Litho London.

Relating to Level Crossings

ROAD 600 FEET-1 IN 25

R Company

Railway

ON AND CROYDON.

PROPOSED NEW ROAD,
present Level Crossing, at the
SAILOR STATION.

L. & C. R. Company

1 in 31
Feet

Croydon

Railway Company

Scale for Ground Plan

Chains

Chain a 1000
Turning Path

ROAD

Bridge

Surface of Road

Surface of New
900 Yards

35.0
30.0
25.0

1 in 40.0 of Road.

20 Feet

Eric Smith's Report.

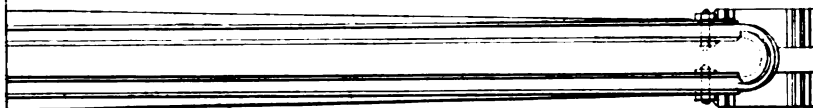
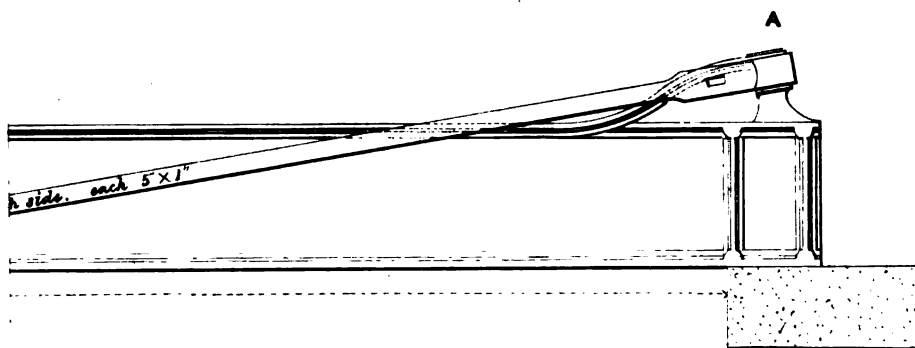
of an Inch to one Foot.

Standedge & Co. Litho. London.

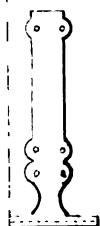
N.

LONDON AND BLACKWALL RAILWAY.

DRAWING of ONE of the GIRDERS
of the BRIDGE, erected over the MINORIES.



ON AT C.



To accompany L^t. Colonel Sir Frederic Smith's Report,
of the 29th July, 1841.

Relating to Openings of New Lines.

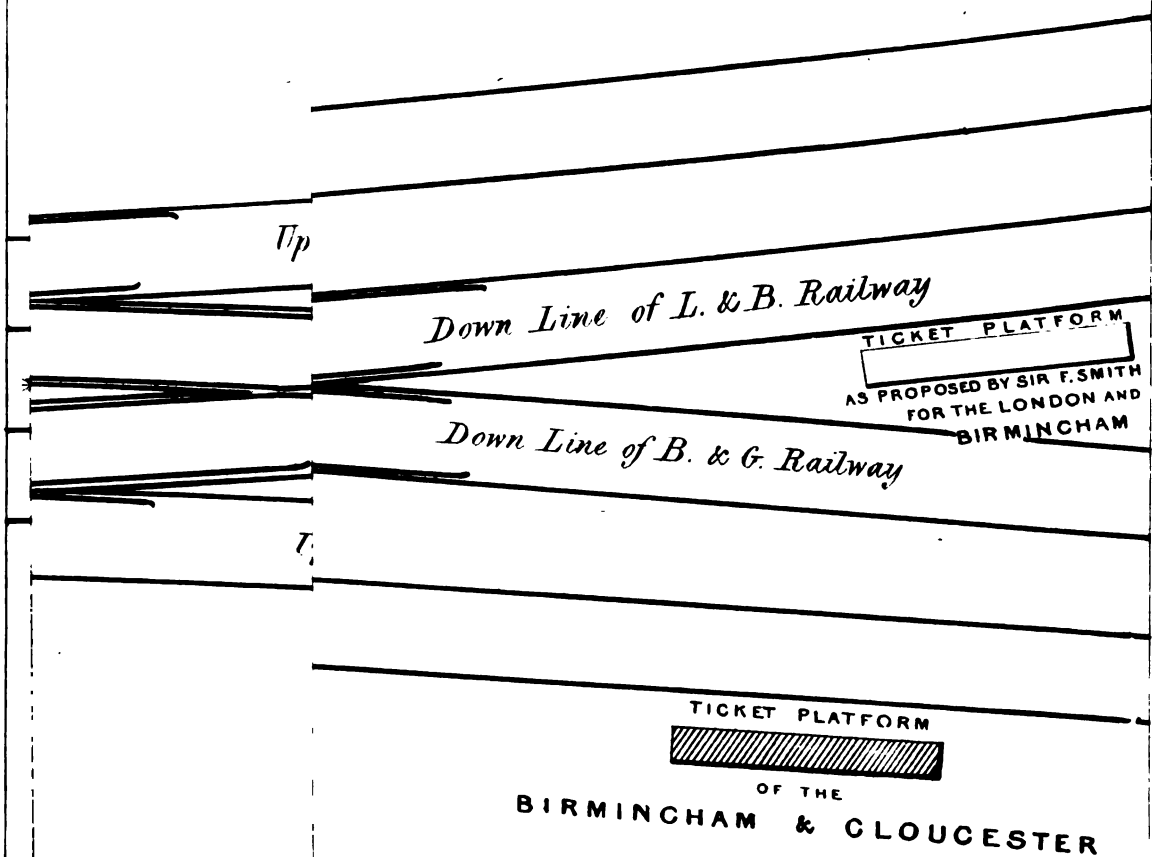
**LOUCESTER RAILWAY,
ANENT WAY.**

**N near LAWLEY S^T VIADUCT,
with the
BIRMINGHAM RAILWAY**

h April, 1841.

Scale


W. S. Moorsom, Eng^r



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R E P O R T

OF

LIEUT.-COLONEL SIR FREDERIC SMITH,
ROYAL ENGINEERS,

AND

PROFESSOR BARLOW,

TO THE RIGHT HONOURABLE THE EARL OF RIPON,
PRESIDENT OF THE BOARD OF TRADE,

ON THE

ATMOSPHERIC RAILWAY.

Presented to both Houses of Parliament by Command of Her Majesty.

LONDON:
PRINTED BY WILLIAM CLOWES AND SONS, STAMFORD STREET,
FOR HER MAJESTY'S STATIONERY OFFICE.

1842.

368.

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R E P O R T.

Board of Trade, Whitehall.

February 15, 1842.

MY LORD,

IN compliance with your Lordship's desire, we have the honour to report the results of our inquiry into the application of the atmospheric principle in producing locomotion on railways.

As Mr. Pim, the treasurer of the Dublin and Kingstown Railway, in his letter addressed to your Lordship soliciting this investigation, has correctly described the means adopted for producing the propelling power,* it is unnecessary for us to repeat that description; we may proceed therefore at once to state the result of our inquiries as to the utility of carrying into effect this novel system of locomotion.

The experiments which have been tried at Wormwood Scrubs have proved the practicability of giving motion to considerable loads at a maximum velocity of 40 miles per hour.

On the 8th August, 1840, we were present at experiments, when a load of 13 tons was thus propelled, and a mean velocity obtained in the first experiment of 20 miles per hour, and in the second experiment of between 19 and 20 miles per hour.

On the 12th and 14th January, 1842, in accordance with your Lordship's instructions, we instituted certain other experiments, when the maximum velocity obtained with a load of five tons was, in one set of experiments, 26, and in the other set 40 miles per hour.

It is therefore, as above observed, no longer a question whether trains of carriages may be worked by means of atmospheric pressure; the points now to be decided are—

1st. Whether this principle admits of its being advantageously applied to greater distances than half a mile, which is the length of the present experimental line.

2ndly. The probable expense of constructing a railway on this principle, and of supplying the locomotive power.

3rdly. The relative economy in working such a line, as compared with a railway worked by locomotive engines.

4thly. The degree of safety which the atmospheric system affords, as compared with other locomotive means.

In order to answer the first question, it was necessary to institute certain experiments for the purpose of obtaining the necessary data. The detail of these experiments it has been thought best to separate from the Report, and to place in the Appendix, with such deductions as we have been enabled to draw from them. We shall therefore only state here the conclusions at which we have arrived, viz. that this principle of locomotion admits of advantageous extension, and that within certain limits the economy of working by it increases with the length and diameter of the pipe. Thus we have found that while it requires a power represented by 41·4 for a pipe of nine inches in diameter, and half a mile in length, it requires only a power represented by 91 to work a similar pipe of three miles in length, for propelling the same load at the same speed, namely 30 miles per hour. Also, that to work a pipe of 18 inches diameter for the same length, the trains moving at the same speed, but the load being four times greater, requires only a power represented by 184.

There is, however, one important question which we could not satisfactorily settle in consequence of the very imperfect state of the present experimental line, viz. the amount of resistance to the forward motion of the piston in the propelling tube. The apparatus at Wormwood Scrubs has been laid down for nearly two years, and being only worked now and then for an occasional experiment, is not in good order; for the embankment has sustained much injury from the weather, having sunk and slipped in several places, and the propelling tube is in consequence greatly distorted, and out of parallelism with the rails. It would have been, therefore unjust to take our data for this resistance from experiments on this line; at the

* See Appendix.

same time, as it is very important that the resistance should be known, we recommend that, before any extensive work is constructed on this principle, proper experiments be made to ascertain what the amount of this resistance may be under favourable circumstances, that is, on a line well formed, in constant operation, and with the rails and tube properly adjusted to parallelism.

If, under such circumstances, this resistance should be found not to exceed 10 per cent. of the whole piston power, as Mr. Samuda states he expects will be the case, it will be much in favour of the economy of this method of working certain lines, particularly those of very frequent traffic.

We now come to the expense of construction.

In the pamphlets circulated by the patentees, credit is taken for two important items which we cannot altogether admit.

First, it is said, that having got rid of the heavy locomotive engine, the rails will admit of a very considerable reduction in weight. We believe that the atmospheric principle will be found to present such great advantage, for the heavy rails which in the progress of the railway system have been introduced into use, have not been adopted solely for the purpose of strength, but also for the sake of the firm and steady bearing they afford, and the consequent easiness of motion and corresponding diminution in the wear and tear of the engine and carriages.

Another questionable item is the estimated reduced expense of cuttings and embankments, it being assumed by the patentees that not having to take the locomotive engine up a plane, much steeper gradients may be introduced than on the present lines. That a great part of the power of a heavy locomotive engine is expended in overcoming its own gravity and resistance in ascending steep planes is certainly true; and it is equally true, that on the atmospheric principle the whole additional force is exerted on the load itself. This is unquestionably an advantage, but still we think its importance has been greatly over-rated.

The patentees propose to work steep inclines by means of larger tubes, but this would involve the necessity of stopping the train at the foot of such planes, and of having again to overcome the inertia of the load; in both instances causing a loss of time.

In respect of locomotive outlay, a line worked by locomotive engines in order to be well stocked should have an engine per mile in addition; this mode of working requires water-stations, engine-houses, repairing-shops, &c. Now we have to place against these the expense of the long vacuum-tube and valve, and the erection of a powerful engine, at every three miles along the road.

With respect to this cost, Mr. Samuda has furnished the following estimate for laying down the atmospheric railway for an extent of three miles on a level plane, and for average loads of 30 tons, to be carried at the rate of 30 miles an hour.

	£.
" Main 12 inches diameter, weighing per yard 2 cwt. 3 qrs. 9 lbs. × 5280 yards = 747 tons 4 cwt. at 7 <i>l</i> . 10 <i>s</i> . per ton	5,604
" Planing, drilling, and coating mains, continuous valves, separating ditto, laying mains, and making joints; including all materials and labour on the main and valve, at 1,500 <i>l</i> . per mile × 3 =	4,500
" One engine, station complete, with a 50-horse engine and air-pump erected and attached to the main	2,000
	<hr/>
	£ 12,104

"The actual engine-power necessary is 42 horses; we should, however, always propose to fix something more than necessary."

"The estimate is for a single line of way, and is only for the atmospheric apparatus. We presume you are better acquainted with the cost of rails, sleepers, &c. than we are, and did not wish us to furnish it. We should, however, propose to use rails not exceeding 30 lbs. per yard. If the three miles be intended to form an entire railway of itself, *two* engine-stations would be required; if not, one engine-station only will be required every three miles, whatever the length, and one extra, as there must be one at each terminus."

For a double line of rails the cost would be 22,204*l*., or 7,401*l*. per mile.

Mr. Samuda claims a reduction of this amount in consequence of the diminished weight of rails which he proposes to use, but we cannot concur with him in thinking that the rail can be reduced with safety from 75 lbs. to 30 lbs. per yard. We are ready however, to admit that it may be reduced to 56 lbs., and this would

take off 450%. per mile from the cost of the permanent way, leaving 6,951%. per mile as the excess over the ordinary railway, which might in many cases operate as a bar to the system, for against this sum we could not reasonably put a larger amount than 2,000%. per mile for engine-stock, workshops, water-stations, &c.; and we must bear in mind that in many situations it might be difficult to get water in the positions otherwise best suited for establishing the stationary engines for the Atmospheric Railway.

We have now to speak of the relative expenses of working. This is, however, a question to which no general answer can be given, because it depends entirely on the daily amount of traffic. We have no doubt that a stationary engine properly proportioned, according to the rules we have indicated for a pipe three miles long, would be able to work trains on a line every quarter of an hour, or every half hour, each way, during the day (say of 12 hours), amounting to 144 miles. Now to work this distance by a locomotive engine, at the moderate estimate of 1s. 4d. per mile, would amount to 9l. 18s., say 10l. per day; whereas the stationary engine power would not cost one half that sum, and consequently a saving in working expenses would arise of 1,800l. or 2,000l. per annum. But if only half this duty were required, the expenses of the two ways of working would be much nearer equal; and again, if only half the latter duty were to be performed, that is of trains starting only every two hours each way, the advantages would be on the side of the locomotive engine. The fact is, that in one case the expenses per diem will be nearly the same, whether working at intervals of an hour or at every quarter hour; whereas in the other, the charge is nearly proportional to the work actually performed.

In the cost of the maintenance of way there would be a difference in favour of the atmospheric principle.

Our next question is the comparative safety of the two modes of transit.

On this head we may observe, that notwithstanding the accidents which have occurred with locomotive engines, it is a great element of safety that the source of power is always present with the train, and may be almost instantly turned off if any necessity shows itself for stopping, and no doubt very many accidents have been avoided by the engine-driver possessing such power. On the atmospheric principle this is not the case; the source of power is at a distance, as it is in a line worked by rope machinery, and it is with *this* system, therefore, rather than with the locomotive engine system, that the atmospheric principle must be compared. With rope machinery, although the source of power is at a distance, and cannot therefore be stopped by the guard in charge of the train, yet he has the means of instantly detaching the train from that power.

We should have been glad to have seen in this case some similar mode proposed for disengaging the train from the piston. This, however, does not appear to have been intended, but Mr. Samuda thinks it by no means difficult to effect.

The method proposed for throwing off the power at present, is a contrivance which would enable the conductor to open the back of the piston, so that by admitting the air from behind, to produce an equilibrium of pressure, the propelling power would be greatly diminished. But however practicable this may be as a mechanical arrangement, and as a means of regulating the speed, it would certainly not be so instantaneous and effective as a total disengagement; for it would require some time to equalize the air in the tube with that of the external atmosphere, by means of such apertures as it would be possible to open, and during that time, although the area of pressure would be reduced, a certain amount of propelling power would remain active and by so much be mischievous. It is true that, not having to contend with the momentum of the heavy locomotive, the breaks would be more effective, but still this principle will be inferior, in respect of safety, to that of rope machinery, without some contrivance for totally and immediately disconnecting the piston from the trains. We do not apprehend that the piston would be damaged by being thus suddenly let go. It would undoubtedly at first rush forward with great speed, but would thereby compress the air before it, which would ultimately bring it to rest without injury.

Having thus stated the views we entertain on this subject, and having given in the Appendix the experimental results and the investigations on which they are founded, we beg to state,

Firstly. That we consider the principle of atmospheric propulsion to be established, and that the economy of working increases with the length and diameter of the tube.

Secondly. That the expense of the formation of the line in cuttings, embankments, bridges, tunnels, and rails will be very little less than for equal lengths of a railway to be worked by locomotive engines, but that the total cost of the works will be much greater, owing to the expense of providing and laying the atmospheric tube, and erecting the stationary engines.

Thirdly. That the expense of working a line on this principle, on which trains are frequently passing, will be less than working by locomotive engines, and that the saving thus effected will in some cases more than compensate for the additional outlay; but it will be the reverse on lines of unfrequent trains. However, there are many items of expense of which we have no knowledge and can form no opinion, such as the wear and tear of pistons, valves, &c.; on these further experience is needed.

Fourthly. That with proper means of disengaging the train from the piston, in cases of emergency, we consider this principle as regards safety equal to that appertaining to rope machinery. There appear, however, some practical difficulties in regard to junctions, crossings, sidings, and stoppages at road stations, which may make this system of less general application.

We may add that the atmospheric principle seems to us well suited for such a line as the projected extension from Kingstown to Dalkey is represented to be, but we should have been glad if this line had been three miles, instead of only one mile and three-quarters in length, as it would have then brought this principle to a more complete and decided test.

We have the honour to be,

My Lord,

Your Lordship's most obedient, humble servants,

FREDERIC SMITH,

Lt.-Col. R. Engineers, F.R.S.

PETER BARLOW, F.R.S.

A P P E N D I X.

DETAIL OF THE EXPERIMENTS FROM WHICH ARE OBTAINED THE DATA EMPLOYED IN THE PRECEDING REPORT.

1. In the first experiments no particular record of results was made, except as regards the speed; it will be sufficient therefore to state, that in the cases at which we were present, maximum velocities of 20, 30, and 40 miles per hour were obtained, the greatest load having been 13 tons, and the least about 5 tons—the mean velocity for the whole distance varying from 11·5 to 20 miles per hour.

Dimensions of the Pipe, Pump, and Engine.

The length of the propelling or vacuum tube is half a mile, or 2640 feet, and its diameter 9 inches. The air-pump employed for exhausting the tube is a cylinder of $37\frac{1}{2}$ inches in diameter; length of single stroke $22\frac{1}{2}$ inches, or double stroke 3·75 feet.

The engine employed to work the air-pump is a small boat-engine.

The diameter of piston, $24\frac{1}{2}$ inches.

Length of single stroke, 2 feet, or of double stroke, 4 feet.

The proper number of double strokes per minute, 40; being the dimensions of an engine nominally of 16-horse power.

It was necessary, however, in our case to ascertain its actual power as exhibited at its working point; namely, its actual lifting power after overcoming its own friction and that of the air-pump piston. With this object the carriage was sent to the end of the line, and its piston inserted in the pipe. The carriage being then retained by its break, we ascertained experimentally the number of strokes that were necessary to sustain permanently and steadily different degrees of vacuum, varying from 15 to others of 22 and $23\frac{1}{2}$ inches.

In the first trial the following results were obtained, namely—

A vacuum of $19\frac{1}{2}$ inches was sustained by 22 strokes per minute.

"	$21\frac{1}{2}$	"	30	"
"	$21\frac{3}{4}$	"	31	"
"	$23\frac{1}{2}$	"	42	"

Second trial.

A vacuum of $15\frac{1}{2}$ inches was sustained by 14 strokes per minute.

"	16	"	16	"
"	18	"	18	"
"	21	"	$29\frac{1}{2}$	"

Third trial gave precisely the same results.

Having thus determined the number of strokes of the air-pump requisite to support different degrees of vacuum, the next question is to compute the mean pressure per inch on the air-pump piston, when working against these different vacuums. This, by a simple differential operation, is found to be expressed in lbs. by

pressure per inch = $\frac{30-h}{2}$ hyp. log of $\frac{30}{30-h}$, h representing the inches of the

vacuum gauge. When $h = 21$ inches, the above formula gives the mean pressure per inch 5·41 lbs. The area of the piston = $37\cdot5^2 \times \cdot7854 = 1104$ square inches. Whence $1104 \times 5\cdot41 = 5972$ lbs., total mean piston pressure. This, in our experiments, was overcome at the rate of $29\frac{1}{2}$ double strokes per minute, or at the rate of $29\frac{1}{2} \times 3\cdot75 = 110\cdot6$ feet per minute.

Hence $\frac{5972 \times 110\cdot6}{33,000} = 20$ horses'-power.

Although, therefore, the engine is only of the dimensions usually denominated a 16-horse power, it was in this experiment doing the duty of 20 horses' power;

and in other cases, with a higher steam pressure, the duty amounted to 25 or 26 horses.

It is essential that this should be clearly understood, lest any error should arise by confounding this actual effect of the engine with its nominal power of 16 horses.

For the purpose of further comparison between the powers employed in the several preceding experiments, the following mean pressures have been computed for vacuums varying between 10 and 21 inches.

Inches.	lbs.	Inches.	lbs.
Vacuum 21	pressure per inch 5.41	15	pressure per inch 5.19
" 20	" 5.49	14	" 5.03
" 19	" 5.51	13	" 4.87
" 18	" 5.49	12	" 4.59
" 17	" 5.43	11	" 4.34
" 16	" 5.33	10	" 4.05

By means of these numbers the powers employed in every case, while the vacuum remains constant, is readily determined. As an example, the number of double strokes required to maintain a vacuum of 18 inches was found to be 18 per minute.

Now the pressure per inch for an 18-inch vacuum is 5.49 lbs. per inch; 18 double strokes per minute is $= 3.75 \times 18 = 67.5$ per minute.

$$\text{Hence } \frac{1104 \times 5.49 \times 67.5}{33,000} = 12.4 \text{ horse-power.}$$

In like manner the power practically employed to maintain any given vacuum may be ascertained by noting the number of strokes made per minute by the engine, and taking the corresponding pressure from the table, without any reference to the nominal power of 16 horses.

Our next object was to ascertain the amount of the lost or absorbed power in producing any required vacuum. With this object we proceeded as below.

The diameter of the vacuum pipe we have seen is 9 inches, and its length half a mile, or 2640 feet.

Its sectional area 63.6 inches.

Capacity . 1166 cubic feet.

The diameter of air-pump, $87\frac{1}{2}$ inches; its length, $22\frac{1}{2}$ inches.

Sectional area 1104 inches.

Capacity . 14.4 cubic feet.

Hence the ratio of the receiver to the pump is as 1166 to 14.4, or as 81 to 1; but allowing for junction-pipe, valve spaces, &c., we have estimated that the pump + receiver : pump :: 85 : 1. Therefore the ratio of rarefaction is $\frac{84}{85}$ at each stroke, and consequently, if no leakage took place, the number of strokes necessary to produce a given vacuum, h , that of the atmosphere being 30 inches, is readily found by the well-known formula

$$N = \frac{\log 30 - \log (30 - h)}{\log 85 - \log 84}$$

Being thus enabled to determine exactly the number of strokes that would produce a given vacuum, supposing no leakage, we may readily find the amount of lost power by simply counting the strokes practically made to produce the same vacuum.

The following results were thus obtained. The engine was put in motion at its usual speed, and then the pump and receiver were connected :—

First trial.—In 25 strokes, vacuum = 12 inches.

40 " " 16 "

57 " " 18 "

88 " " 20 "

Second trial.—In 19 " " 10 "

26 " " 12 "

34 " " 14 "

37 " " 15 "

44 " " 16 "

59 " " 18 "

69 " " 19 "

83 " " 20 "

(Time in making 59 strokes, 1 minute 30 seconds). Computing now the number of strokes which would have produced these vacuums, without leakage, we have the

following results, taking the mean of the two trials in the four cases that are comparative :—

Vacuum.	Mean No. of observed double Strokes.	No. of required Strokes without Leakage.	Additional Strokes to supply Leakage.
12	25.5	21.5	4
16	42.0	32.3	10.7
18	58.0	38.7	19.3
20	85.5	46.4	39.1

The discrepancy between the observed number of strokes in the two trials arises principally from the difficulty of determining accurately the time when a given vacuum is produced, in consequence of the oscillation of the mercury in the gauge tube ; they are however sufficiently approximative for practical deductions.

To facilitate further comparison, the following table shows the number of double strokes that would be necessary to produce the corresponding vacuum, supposing the pump perfect, and that there was no leakage :—

Vacuums.	Double Strokes.	Vacuums.	Double Strokes.
10 inches.	17.1	16 inches.	32.3
11 „	19.2	17 „	35.3
12 „	21.5	18 „	38.7
13 „	24.0	19 „	42.3
14 „	26.5	20 „	46.4
15 „	29.2	21 „	50.8

In the above experiments the vacuum tube was opened to the receiver when the engine was working at its usual speed ; but in one experiment the engine was started from rest, and the times employed in making the vacuum were observed to be,

Vacuum 11 inches, formed in 1 minute 15 seconds.
 „ 20 „ 5 „ 0 „

We may here observe that in many trials we found it scarcely practicable to raise the vacuum so high as 20 inches, when the supply of steam was not abundant ; a vacuum of 16 or 18 inches could always be obtained very speedily, but beyond that the operation of rising went on very slowly. Now it will be seen in our tabular numbers, page 7, that the piston pressure is greatest at 19 inches ; we were induced, therefore, to examine the formula we have given for the pressure to see where the maximum ought to fall.

If we denote $\frac{30}{30-h}$ by y , our formula becomes $\frac{\text{hyp. log. } y}{y}$, which by the method of maxima et minima, gives the fraction a maximum when hyp. log. $y=1$, or when $y=2.718$; but when $\frac{30}{30-h}=2.718$, $h=18.9$ inches, which at once explains what

every one observed in the experiments, viz., the extreme slowness of the motion in the rising gauge after having obtained 16 or 17 inches ; and proves also the propriety of Mr. Samuda's intention of working with vacuums not exceeding 18 inches.

As the amount of lost power, ascertained by the preceding experiments, was due to the compound leakage of (first) the long valve and joints, and (secondly) of that at the vacuum pipe and air-pump pistons, it became an object, if possible, to separate these effects, because that which appertains to the long valve and joints will increase as the length of the pipe is increased, but the other part will remain constant for all lengths.

With a view to this determination the piston was inserted at the end of the pipe, the carriage to which it was attached being prevented from advancing by its break, the whole pipe thus acting as the receiver or vacuum space ; and the number of strokes was noted which were necessary to maintain vacuums of 21, 18, 16, 15½ inches respectively.

The carriage was then moved up the line one-quarter of its length, reducing the vacuum pipe, and of course the long valve leakage, by one-fourth, when similar observations were recorded. The carriage was then moved on so as to reduce the vacuum space and valve leakage one-half, and then to one-quarter, and similar observations recorded. It was, however, found impossible to make the engine go sufficiently slow to obtain the lower vacuums with the short lengths.

B

The following are these experiments:—

Whole Pipe open.

21 inches vacuum was maintained with	29½	strokes per minute.
18	"	18
16	"	16
15½	"	14

Three-fourths Space open.

21 inches vacuum was maintained with	24	strokes per minute.
18	"	16½
17	"	14

Half Space open.

21 inches vacuum was maintained with	18	strokes per minute.
19	"	14

One-quarter Space open.

23 inches vacuum was maintained with 15½ strokes per minute.

The results that we have here, strictly comparative, are the vacuums of 21 inches in the three first cases, the number of strokes being 29½, 24, and 18, and these seem to indicate that about 5½ or 6 strokes per minute were employed in counter-acting the constant leakage of the tube and pump pistons; for, reducing the number of strokes made in each case by 5½, we have the following remainders, 24, 18½, 12½, numbers which are nearly proportional to the different lengths of the long valve exposed to leakage.

From the above results we learn that of the whole power employed to supply leakage, about one-fifth part is constant and due to the leakage of the pistons; the other four-fifths are due to the long valve and joints; and for pipes of greater length will increase as those lengths.

The whole number of strokes to support the vacuum of 21 inches on the half mile was 29½, answering to a 20-horse power, of which 4-horse powers are to supply the leakage of the piston, and 16 to supply that of the long valve and joints. Therefore, with the following lengths of pipe, of 9 inches diameter, the expenditure of power would be for—

½ mile	4 + 16 = 20	horse power.
1	" 4 + 32 = 36	"
1½	" 4 + 48 = 52	"
2	" 4 + 64 = 68	"
2½	" 4 + 80 = 84	"
3	" 4 + 96 = 100	"

With the vacuum 18 inches, the number of strokes was 18, and the horse powers about 12·4, of which one-fifth, viz., 2·48, were constant, and 9·92 variable, so that the power required for—

½ mile	is 2·48 + 9·92 = 12·40
1	" 2·48 + 19·84 = 22·32
1½	" 2·48 + 29·76 = 32·24
2	" 2·48 + 39·68 = 42·16
2½	" 2·48 + 49·60 = 52·08
3	" 2·48 + 59·52 = 62·00

In tubes of larger diameter we may consider the leakage of the long valve for the same lengths to be the same as above, but the piston leakage will be proportional to the diameter.

Experiments on the Speeds obtained with different Vacuums.

The piston pressure per inch on the air-pump is nearly the same for all vacuums from 21 inches to 17 inches, that part of the power of the engine which is engaged in discharging the tube as the train advances, is also nearly the same in all these cases; while the lost power, by leakage, is less as the vacuum is reduced,

as is also the piston pressure in the tube. We were desirous therefore, if possible, to ascertain the working force which different vacuums possessed of urging the train forward, but we failed of obtaining on this part of our inquiry any useful results, the engine not having sufficient power to preserve the vacuums constant. We commenced with pressures of $20\frac{1}{2}$ inches, then 18 inches, then 16 inches, but in all these experiments, except the last, the vacuums were reduced to about 12 or 14 inches towards the end of the trip, instead of remaining the same as at the beginning, or of rising higher. We were unable, therefore, to deduce from them any confirmatory evidence; it may, however, be proper to record them.

First Experiment.

Vacuum at the commencement . . .	$20\frac{1}{2}$ inches.
Time of passing the whole distance . .	1 m. 40 sec.
Total number of double strokes . . .	53.
Mean number per minute	31·8.
Mean speed per hour	18 miles.
Maximum speed during the experiment	20 „
Vacuum towards the last	12 inches.

Second Experiment.

Vacuum at the commencement . . .	18 inches.
Time of passing the whole distance . .	1 m. 55 sec.
Total number of double strokes . . .	60.
Mean number per minute	31·3.
Mean speed per hour	15·8 miles.
Maximum speed during the experiment	17·6 „
Vacuum towards the last	14 inches.

Third Experiment

(Being the 1st repeated).

Vacuum at the commencement . . .	$20\frac{1}{2}$ inches.
Time of passing the whole distance . .	1 m. 46 sec.
Total number of double strokes . . .	61.
Mean number per minute	34·5.
Mean speed per hour	17 miles.
Maximum speed during the experiment	20 „
Vacuum towards the last	14 inches.

Fourth Experiment.

Vacuum at the commencement	16 inches.
Time of passing the whole distance . . .	2 m. 32 s
Total number of double strokes	74
Mean number per minute	29·2
Mean speed per hour	11·2 miles.
Maximum speed during the experiments . .	20 miles.

Note.—This maximum speed was towards the end. It was but 13 miles at the usual place of maximum, the vacuum towards the last was omitted to be noted in this experiment.

No conclusions can be drawn from these four experiments, except that, by the falling of the vacuum, it is clear that, with all the force thrown upon the engine, it was inadequate to the duty it had to perform.

Other experiments or rather observations were made on the time in which the vacuums fell inch by inch, from leakage only, the engine being at rest, and the whole length of pipe exposed to leakage; of which it will be sufficient to record the following.

The height of vacuum gauge being 21 inches,—

In one minute it fell	$4\frac{1}{2}$ inches, viz., to $16\frac{1}{2}$ inches.
In the second „	4 „ $12\frac{1}{2}$ „
In the third „	$3\frac{1}{2}$ „ 9 „

Deductions from the preceding Experiments.

It has been seen that the air-pump is about one 85th part of the whole vacuum space; and this vacuum space has to be discharged of its air by the air-pump, while the carriage is passing over the line. At 30 miles an hour, the half mile must be passed in one minute; therefore the pump must make about 41 or 42 double strokes in the minute, equivalent to about a 29-horse power, besides which we must have a sufficient leakage-discharging power for the whole length, although that power will be in excess after the carriages have advanced a short distance, and will be more and more in excess as the train advances.

The actual lost power by leakage is indeed only half that necessary to support the entire length for the time the train is passing, but it is difficult to take advantage of this circumstance; we have seen that when the carriage is at rest at the end of the line, there is a loss of four inches in a minute in the vacuum; if therefore only half the leakage-discharging power were provided, the vacuum would fall at first nearly two inches per minute, and therefore on a line three miles in length, it would be greatly reduced by the time the train had reached the middle of the line, and the consequence must be, that the first half of the line would be passed very slowly, and that the latter half must be passed with great velocity, in order to obtain the mean speed of 30 miles per hour, which irregularities are objectionable. Some saving however might be effected by employing the whole power of the engine to raise the vacuum, before starting, two or three inches above the intended, working vacuum; but we shall not attempt to estimate the value of this and other practical advantages that may probably be introduced. We must, as the experiment at present stands, assume that the leakage discharging power for the whole length must be provided. This, as we have seen, consists of two parts, the one constant, viz., that due to the pistons, and the other variable, as depending on the length of the tube, viz., the leakage at the joints and at the long valve.

The amount of this leakage power for different lengths is given in pages 9 and 10, and adding to this, the constant discharging power at 30 miles per hour, we find the whole power required, for the following different single lengths of pipe of nine inches diameter, at the above speed, to be—with a vacuum of 21 inches—

$\frac{1}{2}$ mile	49 horse power.	2 miles	97 horse power.
1 "	65 "	$2\frac{1}{2}$ "	113 "
$1\frac{1}{2}$ "	81 "	3 "	129 "

With a vacuum of 18 inches at the same speed,—

$\frac{1}{2}$ mile	41·40 horse power.	2 miles	71·16 horse power.
1 "	51·32 "	$2\frac{1}{2}$ "	81·08 "
$1\frac{1}{2}$ "	61·24 "	3 "	91·0 "

The pressures in these two cases, taking the piston surface at 63 inches, will be in the first 661 lbs., and in the second 567 lbs.

To render the pressure with the latter vacuum equal to the former, the tube must be increased from 9 inches to 9·7 inches, and the discharging power increased from 29-horse power to 34-horse power. So that in this case the required powers would be—

With a vacuum 18 inches, diameter of tube 9·7 inches.

$\frac{1}{2}$ mile	46·40 horse power.	2 miles	76·16 horse power.
1 "	56·32 "	$2\frac{1}{2}$ "	86·08 "
$1\frac{1}{2}$ "	66·24 "	3 "	96·0 "

From these results we may draw some important conclusions, viz., that to work three miles of pipe requires little more than double the power requisite to work half a mile, and that the lower vacuum is worked considerably cheaper than the higher; the higher or 21-inch vacuum requiring 129-horse power to effect precisely the same duty as is performed by 96 horses with an 18-inch vacuum.

It will also be seen that a larger pipe is much more economically worked than a smaller one. A pipe nine inches diameter and three miles long requires, as we have seen, 91-horse power, when the vacuum is 18 inches. Whereas a tube of 18 inches would require only 184-horse power, viz., for discharging 116 horses, for piston leakage 6 horses, for long valve and joint leakage 62 horses.* So that,

* It may perhaps be questioned whether the joint leakage will be the same for large and small pipes; if it should be greater, some further power than 62 horses would be required.

with little more than double the power, four times the amount of piston pressure may be obtained.

It appears therefore that the economy of working increases at every point as we increase the scale of our operations.

The next question is the time that will be necessary to obtain a given vacuum in pipes of great lengths, as, for example, three miles.

We have seen that the time of forming a vacuum of 18 inches in a pipe 9 inches diameter, and half a mile long, required one minute and a half: that the number of strokes was 58; and that the number that would have produced this vacuum, had there been no leakage, would have only been 38·7, showing a lost power therefore of 50 per cent.; the ratio of the pump space to the whole vacuum space being in this case as 1 to 85, and the power of the engine at the working point about 25 horses.

Now for the three mile pipe, the proposed engine power is 91 horses; therefore increasing the pump space in the ratio of 25 to 91, and the whole vacuum space as half a mile to three miles, or as 1 to 6, the ratio of rarefaction is found to be $\frac{1}{1\frac{1}{6}}$, and the number of strokes, supposing no leakage, would be—

$$N = \frac{\log 30 - \log (30 - h)}{\log 140 - \log 139} = 128$$

to which adding 50 per cent. for lost power, gives the total number of strokes 192; and then as 58 : 192 so is one minute and a half to 4 minutes 58 seconds, the time requisite to form the vacuum in a pipe nine inches diameter and three miles in length.

By a like process, we find the time that would be necessary to obtain the same vacuum in a pipe of 18 inches diameter and three miles long, with the power of 184 horses, to be about 10 minutes.

For the convenience of calculation we have assumed the same length of stroke in the larger engine as in the smaller. Of course this would not be the case, but the speed of the piston per minute would be about the same, and the difference on this account therefore would not materially affect the final result.

We have already stated that the unit of our horse-power is 33,000 lbs. raised one foot in a minute, and that our numbers must not be confounded with the nominal power of the engine as estimated in the usual way by the diameter of the cylinder and length of stroke. Every such nominal horse-power may be considered as capable of raising 58,000 lbs. one foot in a minute, and, after deduction for the friction of the air-pump, of still exhibiting at the working point 52,000 lbs.; consequently all our numbers require to be reduced in the proportion of 52 to 33 to obtain from them the nominal horse-power requisite for producing any of the above results.

The next and last question connected with this part of the inquiry is the resistance opposed by the friction of the piston, and of the apparatus for opening and closing the long valve. The preceding investigations will enable us to determine the pressure per inch, and consequently the whole pressure upon the tube piston, with any proposed diameter of pipe, with any vacuum, and for any proposed speed; but it is obvious that only so much of this pressure will be effective as remains after overcoming the resistance above referred to.

This resistance, as exhibited by the apparatus at Wormwood Scrubs, is very considerable; so great, indeed, that unless a large portion of it is due to the imperfections of the line, it is such as would render any useful application of this principle rather questionable; but we are disposed to attribute a great part of it to the circumstances under which the experiments are at present made.

The apparatus has been erected nearly two years, with only now and then an occasional experiment; the embankment has suffered much from the weather, and the propelling tube itself is greatly bent and distorted by the sinking of the bank, so that there can be no question that this resistance would be much less on a well-formed line in constant operation; but what would be its actual amount we have no means of judging. We would recommend, therefore, before any extensive work on this principle be undertaken, that proper and sufficient experiments should be made to ascertain, as nearly as possible, what this resistance would be under more favourable circumstances. We may remark here, that whatever this resistance may be in any case, it will be proportionally less as compared with the pressure, as the diameter of the tube is increased; the one increasing simply as the diameter of the pipe, and the other as its sectional area.

Additional Experiments.

After the foregoing pages were written, Mr. Samuda adjusted three of the pipes, so as to bring them nearly level and parallel to the rails, in order to ascertain, as far as is practicable, the amount of the piston friction; and, as nearly as could be determined, it appeared to be about 10 per cent. of the whole pressure, with vacuums of from 2 to 14 inches. But not only is the line in a very dilapidated state, but the carriage itself is in bad order, exhibiting a friction amounting to 14 or 15 lbs. per ton, whereas it ought not to show more than about 6 lbs. per ton; we cannot, therefore, consider these particular results as conclusive.

Subsequent experiments were also made in reference to the proportion of lost power to be assigned to the piston leakage and that of the long valve. Mr. Samuda has been accustomed to allow more for the former and less for the latter than we have deduced from our experiments, and as this subdivision of the total lost power between the constant and variable parts is an important point in this inquiry, we appointed another day for a repetition of those experiments; but the results confirmed our previous deductions.

We have attributed one-fifth of the total lost power on the half mile to the piston, and the other four-fifths to the long valve and joints, and similar results were obtained on this occasion. We found, for instance, that the vacuum of 21 inches on the whole length was sustained by 25 strokes per minute, and by 20 strokes on three-fourths the length, which, after deducting 5 (one-fifth of the greater) from both, the remainders, 20 and 15, are proportional to the lengths, viz., 4 to 3.

The 19-inch vacuum for the whole length was supported by 20 strokes, and on three-fourths the length by 15·75, which, after being reduced by one-fifth of the greater, leave for remainders 16 and 11·75, also nearly as 4 to 3.

The 18-inch vacuum for the whole length was sustained by 18 strokes, and on three-fourths the length by 14·5, which, being reduced as above, again leave remainders, which are nearly as 4 to 3.

The 21-inch vacuum for the half-length was noted at 16·8 strokes, which shows a discrepance from the above law; but in this case the engine varied greatly in its speed during the time.

When its motion was most uniform, we noted 30 strokes for two minutes, which agrees exactly with the law above stated.

As another test we made an experiment by withdrawing the piston, and inserting a tight plug in the end of the pipe, well luted with tallow to prevent any leakage at that part, and we then found the vacuum of 21 inches sustained with 20½ strokes per minute, which shows again a leakage amounting to about one-fifth at the piston. This experiment seems also to prove that the air-pump piston leakage is very inconsiderable. There appears, therefore, to be no ground for making any change in our former division of the lost power, as to the portion of it which belongs to the constant and that which appertains to the variable leakage. We have been the more particular in illustrating this point, because upon it depends the amount of power that ought to be provided for lines of greater lengths than half a mile, and consequently the economy of this principle of working as compared with other locomotive means.

LETTER FROM MR. PIM TO THE EARL OF RIPON.

MY LORD,

I BEG leave, through the medium of your Lordship, to submit to the consideration of the Lords of the Committee of Privy Council for Trade, the following communication respecting the system of locomotion on railways, by means of the pressure of the atmosphere, which the inventors have called "The Atmospheric Railway."

The institution of a special department of the Board of Trade for the surveillance, and, to a certain extent, for the control of railways, will, I hope, be considered sufficient justification for trespassing on their Lordships.

If the proposal I am about to submit had no further object than to lessen the present expenses in the construction, maintenance, and working of railways, I would respectfully urge that it is well entitled to the attention of your Lordship; since, to use the words of an enlightened and intelligent writer on these subjects, "in all countries and under all circumstances, it is an object worthy of a statesman, to prevent a waste of the national means, and to give a right direction to the public expenditure." If, in addition to economy, the proposal went to obtain considerably greater speed of travelling with increased comfort to the passengers, it would have still stronger claims to favourable consideration; but if, besides these advantages, it is proposed to remove from the railway system almost all its liability to accident, and to confer on it almost absolute exemption from danger, combining in itself all the great desiderata of railway transit, safety and comfort being closely bound up with economy and expedition, I have no hesitation in claiming that it is entitled to rank with the most important inventions of the present age, and I am confident it will not fail to obtain from your Lordship and the Board of Trade, the attention and inquiry it deserves at your hands, as conservators of the public safety.

This claim is not made lightly, nor without a suitable feeling of responsibility; it has resulted from a careful and prolonged investigation, and from repeated experiments, in which I have been assisted by many of the most distinguished men of science, and by several eminent practical engineers, whose concurrent opinions have led me to such a perfect conviction of the importance of the subject, as to induce this application to your Lordship.

I will commence my statement with a concise description of the means by which the objects I have enumerated are obtained, and will then state, in some degree of detail, the advantages offered by the proposed plan, which will necessarily lead to some comparison with the present system; and I shall beg to ask your Lordship's kind attention to the suggestion I shall, in conclusion, venture to offer, as the means of obtaining some useful result.

It is very generally known that several ingenious persons have, from time to time, proposed to employ the pressure of the atmosphere, as an element of locomotive power; but their speculations and suggestions were so far removed from practical efficiency, that proposals to adopt an atmospheric or pneumatic railway have hitherto been received with contempt or ridicule; indeed, so great has been the prejudice against the principle, that very few, even among those most interested in railways, have taken the trouble of investigating what has been accomplished by the very simple and complete apparatus constructed by Messrs. Clegg and Samuda, whose invention has been publicly exhibited on the West London Railway, at Wormwood Scrubs, for nearly 18 months past.

Although the scale upon which these experiments have been tried, may be thought scarcely sufficient to arrive at an absolute demonstration, by those who only view it superficially, every successive visit has tended to confirm the conviction in the minds of those best qualified to decide, that the invention combines the great essentials of *economy*, *expedition*, and, above all, of *safety*.

On this system of working railways, the moving power is communicated to the trains by means of a continuous pipe or main, of suitable diameter, laid in the middle of the track, and supported by the same cross-sleepers to which the chairs and rails are attached; the internal surface of the pipe being properly prepared by a coating of tallow, a travelling piston made air-tight by leather packing, is introduced therein, and is connected to the leading carriage of each train by an iron plate or coultter. In this position, if part of the air be withdrawn from that length of pipe in front of the piston by an air-pump, worked from a stationary engine or by other mechanical means, placed at a suitable distance, a certain amount of pressure on the back of the piston (being the locomotive force) will take place, proportioned to the power employed; in practice, and to work economically, it will be sufficient to produce an exhaustion of air in the pipe, equal to causing a pressure from the atmosphere, upon or behind the travelling piston, of 8 lbs. per square inch, which is only about one-half the pressure due to a vacuum. Supposing the main pipe to be of 18 inches internal diameter, it will receive a piston of 254 superficial inches area, on which, with the above pressure, a tractive force of 2,032 lbs. is consequently obtained; and this is capable of propelling a train weighing 45 tons (or eight to nine loaded carriages), at the rate of 30 miles an hour, up an acclivity of 1 in 100, or 53 feet per mile.

The iron coultter being fixed to the travelling piston within the pipe, and also to the leading carriage of the train, connects them together, moving through an aperture formed in the top,

and along the whole length of the pipe; while one set of vertical rollers attached to the piston-rod, at some little distance behind the piston, progressively lift up for the space of a few feet, and another set of rollers attached to the carriage close down again, a portion of a continuous flexible valve or flap, of peculiar construction, covering the aperture; and it is the very simple, ingenious, and efficient mode of successively opening, and closing down and hermetically sealing this valve, as each train advances and moves on, that constitutes the merit of the invention, and the foundation of the patent; the operation consisting first, in opening the valve to admit the free admission of the external air, to press on the back of the piston, and produce motion; and then in effectually closing down and sealing the valve again, so as to leave the pipe in a fit state to receive the travelling piston of the next train, and ready to be again exhausted of its air.

Stationary engines of sufficient power, proportioned to the amount of traffic and speed required, would, in practice, be placed at intervals of about three miles apart, and be arranged to work the railway to that length, alternately on either side of their position, as might be required.

I have not attempted to go into a more detailed explanation of this simple mechanism, nor of the mode in which the main or pipe may be divided, by "separating, exit, and entrance valves," which do not offer any difficulty either in construction or use, into suitable and convenient lengths for exhaustion, in such manner as to allow the passage of the train from one length into another, with any degree of velocity; these, and all the other minutiae will be best understood, by those who may be desirous of entering into them, from a visit to Wormwood Scrubs.

It may be sufficient here to observe, that the composition for sealing the valve has stood the effect of exposure to the seasons and of continued use for nearly 18 months; that the tallow lining of the pipe produces a smoothness over its interior infinitely cheaper, and probably more effectual, than the most finished boring; and that the connexion of the piston in the pipe, with the train, will be readily comprehended by any one who will examine a pencil moving in an ordinary pencil-case.

When it becomes necessary to stop or retard the carriages, in addition to the use of a common break, a valve in the travelling piston may be opened by the guard or conductor of the train, whereby, the external air being admitted in advance of the piston into the exhausted portion of the pipe, the propelling power is at once destroyed.

The separating valves, in the main or pipe between each section or division of the line, being made self-acting, there will be no occasion for stopping, or even for retarding the movement of the train, in passing from one division of the pipe to another, as the air is successively exhausted by the stationary power, placed at the proper intervals; the carriages may, therefore, pass continuously, at any required velocity, as if drawn by a locomotive engine; and it is necessary to keep this circumstance in mind, as by any other system of traction by stationary engines, than the atmospheric, a stoppage and a change at each engine is unavoidable.

All written descriptions of mechanical arrangements tend to produce on the minds of those not well acquainted with such details an impression of the existence of much greater complexity than is really found; one inspection, however, of the apparatus at Wormwood Scrubs will convince any inquirer how extremely simple it is, and how very little liable to get out of order; that those parts which have a tendency to wear can be easily and cheaply replaced; and that the comparison is strikingly favourable to the proposed system of working as contrasted with the locomotive engine, where all the complex details are crowded into the smallest possible space, where a considerable portion is necessarily exposed to the effects of an extremely high temperature, the several parts loaded with the strain of the whole force of the steam, moving with great rapidity among themselves, and where the whole machine generating the motion is itself impelled along with the mass at a high velocity.

The great feature of the modern system of railway traffic is this locomotive steam-engine; and nothing is, perhaps, better calculated to demonstrate the mechanical genius of the country than the successive improvements which have been applied in the details of its construction. While our engineers have gradually ventured to lay out railways deviating greatly from the truly horizontal lines, originally considered nearly indispensable, and have increased the velocity of the trains to an extent almost alarming, the skill of the mechanist has kept pace with the necessity of finding powers to do the duty required; and by dint of strict regulation of the expenditure, and various minor improvements, the cost of locomotive power has certainly decreased, when calculated upon a mere mileage of the trains. But as the gradients of railways have been made steep, and as the rate of travelling has been augmented, the engines have of necessity been made of greater power and weight, and additional sources of danger created by the introduction of assistant locomotives to surmount inclines, or to keep up high speeds, and by the necessary increased momentum of the trains.

With all the recent improvements and saving in the cost of locomotive power, the wear and tear, as compared with stationary power, is, however, fully 20 to 1, as may be exemplified in many instances of stationary engines working 10 or 12 years without any material repairs, and scarcely without stopping, and contrasting this with the costly establishments and constant expenditure incurred, even on short lines of railway, in keeping up locomotive engines to their effective performances.

In addition to the causes of damage and expense from the use of this travelling power, there are the delays incident to the slipping of the engine-wheels from the want of adhesion when the trains are heavy, or the gradient steep, or the rails "greasy" from slight rain, or glazed by fog or hoar frost, and again by the freezing of the pumps in severe wintry weather; each of which causes of delay becomes an additional source of danger, from which repeated and serious accidents, attended with fatal results, have happened. Although the occurrence

of the pumps freezing is not frequent in this country, yet in many parts of northern Europe and America it must almost act as a total stoppage to railway traffic with locomotive engines in the depth of winter. The variation in the rate of travelling, from the varying velocities of trains drawn by locomotive engines, is likewise a cause from which accidents occur; and yet these different rates of speed can scarcely be avoided, as third-class passengers and luggage, to be economically transported, must necessarily go by slower trains.

To these various disadvantages in working with locomotive power may be added the necessity of using coke almost exclusively, which, in remote districts particularly, adds enormously to the expense. Fixed engines, consuming coal or turf, (and, on the continent of Europe and in America, wood,) as the case may be, will give out steam-power at a greatly less cost than locomotives can do under the most favourable circumstances. But besides the wear and tear of the locomotive engine, and its injurious effects on the railway, there are some other striking disadvantages connected with it: a very considerable proportion of its power is manifestly absorbed in moving its own weight and that of its tender; while it is equally obvious that the faster it travels, and the further the gradient deviates from a horizontal line, the more power is thus absorbed; but few persons are aware that this loss takes place in a rapidly increasing proportion, not only arising from the causes I have stated, but from others which are inherent in the construction of the machine; so much so, that it is stated by Mr. Wood, in the last edition of his work on Railways, that, under ordinary circumstances, increasing the velocity of a train from 25 to 30 miles per hour is attended with a loss of more than half the effective power of the engine. A similar loss is sustained if the locomotive has to draw its load up an incline scarcely perceptible to the unpractised eye; and, should this inclination be increased to 1 in 100, the effect is reduced to about one-fourth of that produced on a horizontal plane at the previous velocity, the power being lost or absorbed in the inverse ratio in which it requires to be augmented, precisely at the moment when it is most important to obtain an increase. This subject has been ably treated in the Second Report of the Irish Railway Commissioners, (see notes D and E, pp. 104 to 110, which are understood to be from the pen of Professor Barlow.) It is there shown that "the power thus absorbed, in what may be termed the preparation for motion, with first-class locomotives, is 1,075 lbs., which is sufficient to draw more than 14 tons on a good road by horse power," "and on a canal, with the usual barges," "more than 190 tons," and that "this absorbed power is nearly one-third of the whole power of the engine." Now the great advantage of the atmospheric system will be to obviate the waste of power, and consequent absorption of profits, arising from transporting useless weight and overcoming unnecessary friction, which it is hopeless to succeed in effecting by any other known mechanical means;* for, as it is proposed to work on this system, there will be nearly obtained a corresponding dynamic effect for the amount of power generated, whatever it may be; whilst, by the present system, as I have already shown, there is an enormous absorption of power by the locomotive, whether moving at high rates of velocity, or up any material acclivities.

It is manifest that on railways intended to be worked by atmospheric power, there is not at all the same necessity for having "good gradients," as on those now at work; and wherever it may be necessary to adopt rather steep inclines for some short distance, it can easily be accomplished by increasing, at the place of difficulty, the dimensions of the apparatus and the amount of mechanical power.

If then, by the proposed means, steep rates of inclination may be overcome without any further difficulty than that of supplying a proportionate increase of power, at its proportionate cost, it is clear that the savings in earth-work, bridging, road-approaches, rails, curves, and other points of expense in construction will follow of course; from the small height required for the carriages, the road may generally be so concealed as to be very much less objectionable in comparatively private grounds; and various other sources of considerable expense may manifestly be obviated. Thus facilities will be afforded for the profitable introduction of railways into districts which would be almost impermeable by the present means.

The economical advantages of the atmospheric system will be further exemplified in the diminution of the expense of maintenance. The destructive action of the locomotive engine (seldom, with its complement of water and fuel, of less weight than 15, and often nearer to 20 tons) no longer impinging on the rails, a comparatively small sum will keep the line in repair; and though it may be difficult beforehand to assign the exact proportion of saving, it is evident the amount must be very considerable.

In the carrying department the whole of the water stations, repairing shops, and fittings up, necessary for the locomotive engines, are at once dispensed with, and the coverings and general arrangements of all stations much diminished in cost; heavy turnplates may be wholly done away with, and even the smaller ones, except at the termini of great lines, as the carriages can move in either direction; every description of carriage, having no longer to sustain the shock and tug of the locomotive, may be made very much lighter and cheaper, and built to carry a greater useful load both of goods and passengers in proportion to the weight, than is the case at present, and will last considerably longer.

* The patentees have illustrated this by supposing, for the sake of argument, the expense of maintaining and working the London and Birmingham Railway to remain *unaltered*, but, by the adoption of some other mode of obtaining power, that the necessity of carrying the weight of the locomotive engine and tender (20 tons) with each train was obviated, that weight being perfectly useless. It is clear that the Company would then be able to transport with each train, for the same cost as at present, 20 tons gross, say 15 tons net, of profitable merchandise additional, which (at the lowest charge for goods along the whole 112 miles, viz., £2 per ton), would add to the revenue £30 per journey, or with the present number of trains (12 in each direction every working day), about £225,000 a year, equal to an additional dividend of 5 per cent. to the subscribers.

The rate of travelling by the atmospheric railway will depend on the rate at which the air in front of the piston may continue to be pumped out by the engine, a sufficient degree of exhaustion having been previously obtained to move the load at the required velocity : and I see no reason to doubt that a speed of 60 miles per hour may be easily, economically, and safely obtained by this means ; and in addition the passengers will be relieved from the noise, smell, dust, sparks, and hot cinders from the locomotive engine.

A moment's inspection of the apparatus, or a little consideration of the description, will be sufficient to produce the conviction that the pressure of the atmosphere cannot move two trains at the same time in opposite directions between any two stationary engines, and thus collision becomes impossible on the atmospheric railway. It is equally obvious that one train cannot overtake another, and the leading carriage of each train being firmly attached to the piston-rod, it is scarcely possible that a carriage can be driven off the rails. Thus the ordinary sources of railway accidents appear to me to be removed, and the apprehension of danger now unfortunately so general, would soon naturally subside on the introduction of this principle into practice.

It becomes manifest from the preceding statements, that by the proposed means single lines of railway may be worked with perfect safety ; there are but few districts of country through which, by starting trains with sufficient frequency, a single line of railway would not be adequate for all their present or prospective traffic, even with the use of locomotive engines ; but single lines cannot be worked by these machines without incurring that risk of collision which will render the practice highly objectionable, and will always prevent the use of such lines to their full extent or capabilities.

The atmospheric principle is free from this objection, and single lines can be worked thereby fully and effectively. Trains may be despatched from each end of any line in opposite directions, as frequently as the traffic may demand, without the possibility of coming into collision ; as it has been already shown that no trains in motion can possibly approach nearer to each other than one section of the main pipe, being at the least three miles. Sidings would of course be provided at every station.

In first construction the economy will be very great, where the railway shall be laid out originally to be worked on the atmospheric principle ; first, the saving on the longitudinal section, arising from the system of gradients which may now be adopted ; next, the consequent saving in transverse section, further increased by the certain assurance that single lines may be almost universally introduced without any apprehension of danger ; the cost may be likewise materially lessened by introducing curves of much shorter radii than on ordinary railways ; the rails may be reduced to a weight little above a third of that now generally adopted, and the expenditure on the remainder of the " upper works " be greatly economised. Nor is this all : where bridges or viaducts have to be built over roads, ravines, or rivers to carry the railway, very light and inexpensive structures may be substituted for the hitherto costly erections, in such cases necessary to sustain the weight and action of the locomotive engines. And where the line has to pass below roads or canals, or through tunnels, the height of the arch may be made much lower than at present, eight feet in height, allowing sufficient space to clear the tops of the carriages ; and in every place this will form a vast economy, which will be well and readily appreciated by the engineer. A few sections and diagrams illustrating the difference in some of the works necessary to be executed on the present and on the proposed plan, will probably be sufficient to bring this part of the subject forcibly before your Lordship. Some of these illustrations, however, embrace extreme cases.

With stationary engines placed at intervals of say three miles, there may be at those distances, under judicious management, a large amount of spare power to be employed for many useful purposes. At times between the passing of the trains, when the engine would not be required to work the air-pump in exhausting the pipe, it might grind oats or wheat, saw wood or stone, pump-water, drain lands in one part or irrigate them in another, thus performing various mechanical or agricultural operations ; in suitable situations a smaller engine might be continually employed, in lieu of the larger one, in raising water to a proper reservoir, where it would be always ready and available as the trains might arrive, being equally applicable as steam to work the air-pump. All the contrivances for the economic generation and use of steam, such as clothing the boiler and working by expansion, are available to the fullest extent with the stationary engine, which is not the case with the locomotive. In some places the natural supplies of water might even be accumulated in sufficient quantity to dispense with the steam-engine altogether.

What the ultimate result would be of having a large amount of steam power,* which may be hired out on most reasonable terms for various useful purposes, spread over the face of the country at intervals of three miles, and having a railway communication with each of them, I shall not now stop to inquire ; but I submit it as an interesting and peculiar feature of the proposed plan, and one eminently deserving your Lordship's attention.

As it is practicable by the introduction of the atmospheric system to reduce the cost of constructing, maintaining and working railways so materially, a corresponding reduction in the charges for transmission of goods and passengers will follow ; if, in addition, we are enabled to carry passengers at considerably greater speed and with much greater comfort, and, above all, if we are able to remove the apprehension of personal danger, who is there bold enough to assign the limit to the advantages of railway intercourse by this means ?

It may, perhaps, not be unnecessary to anticipate the very natural inquiry, why this in-

* In round numbers, upon the present and proposed Railway lines throughout the United Kingdom, this power would be equal in the aggregate to about that of 100,000 horses, and available for probably eight hours out of every twelve, should advantage be taken of it.

vention, possessing all the advantages I have endeavoured to enumerate, has not yet been adopted by some of the enterprising parties engaged in railway speculations, or to explain why the patentees themselves have not brought it out in a sphere of more extended operations.

The explanation is easy, and the answer to the inquiry simple. An experimental apparatus, in the hands and under the sole management of the patentees, will never satisfy the public. I submit, however, that they have already done more than enough in demonstrating the principle and practice of their invention, to have induced spirited parties to have taken the matter up, were it not for the great amount of prejudice, arising chiefly from the abortive attempts of those who have hitherto trifled with this great principle of power. Independent of the extraordinary depression of speculative enterprise at the present moment, and which a variety of causes seem likely to retain in that state for some time to come, it is scarcely to be expected that those who are so deeply interested in the numerous railways already constructed and in operation, whether as directors, shareholders, or engineers, should feel any desire to develop the capabilities of a new system, which may become the means of creating formidable rival lines. This will be better understood when I explain that, from causes which it is not now necessary to go into, the great direct line of railways connecting Liverpool and Manchester with the metropolis, have alone involved an expenditure of nine millions sterling; and that the annual receipts are about one and a half millions, of which nearly 50 per cent. is absorbed in the expenses of working and maintenance.

The satisfactory solution in the eyes of the public of the atmospheric system, reduced to practical usefulness, could not be long without producing results, that would materially strike at the root of the monopoly which these great lines possess, and which has been often complained of.

It can be readily shown that the same extent of railways, connecting the above important places, might be made, on the atmospheric principle, at about one-third of the above cost; and when completed, might be worked at nearly a proportionate reduction on the present gross charges; thereby ensuring a corresponding diminution of expenses to travellers, while affording, as has been explained, greater comfort, safety and expedition.

However much, therefore, the public would benefit from the success of this invention, it is evident the numerous persons connected with railway establishments, even if they were as thoroughly convinced as I am of the accuracy of what I now set forward, are the last persons to be expected to encourage the patentees, or to try the experiment.

Again, no railway at full work could even make a trial of it, without most materially interfering with their existing traffic; and, it may be doubted whether the funds of any Company could, with strict legal propriety, be appropriated to the undertaking of such an experiment except upon their own line. The conducting of any further inquiries to test the merits, or to discover the practical disadvantages, if any exist, of the atmospheric railway, on which are to depend the adoption or rejection of this ingenious application, must therefore be undertaken by parties whose science, station, and character will, by an unbiased report, stamp that value on the invention which it ought to receive, should it be found to merit such approbation; and it is only from the Railway Department of the Board of Trade that the first steps to forward such an inquiry and report can emanate.

This, my Lord, is my statement; and I respectfully submit that I have established a case for further inquiry; to facilitate which, I am authorised by the patentees to state, that the present apparatus on the West London Railway, and the means of working and experimenting, shall be most unreservedly placed at the disposal of the Board of Trade and its officers; and that all drawings, specifications, calculations, and other information shall be furnished, which may be considered necessary to give proper and full explanations.

May I, therefore, beg your Lordship, in your official capacity as President of Her Majesty's Board of Trade and Plantations, to submit this letter to your Right Honourable Board, accompanied by my respectful but earnest request, that they may be pleased to refer it to such persons as their Lordships may select, *to inquire into the several statements herein contained*, and to report to your Lordships *fully* thereon, and *particularly*, whether this invention is entitled to a further and more extended trial, under suitable superintendence; and that your Lordships may also make such other and further orders in the premises, as the important interests herewith connected may appear to your Lordships to demand.

I have, &c.,

JAMES PIM, Jun.,

Treasurer of the Dublin and Kingstown

Railway Company.

Earl of Ripon,
&c. &c.

